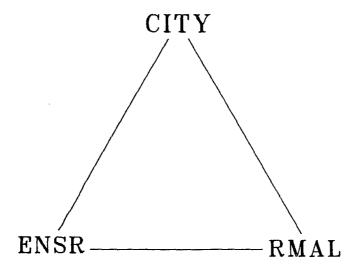


ANNUAL PERFORMANCE REPORT
OF THE
GRANULAR ACTIVATED CARBON TREATMENT SYSTEM
FOR 1993

REILLY TAR & CHEMICAL CORP.
N.P.L. SITE
ST. LOUIS PARK, MINNESOTA

SUBMITTED MARCH 15, 1994



ANNUAL PERFORMANCE REPORT

OF THE

GRANULAR ACTIVATED CARBON TREATMENT SYSTEM FOR 1993

SUBMITTED TO THE

REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

EXECUTIVE DIRECTOR
MINNESOTA POLLUTION CONTROL AGENCY

COMMISSIONER MINNESOTA DEPARTMENT OF HEALTH

BY

THE CITY OF ST. LOUIS PARK, MINNESOTA

PURSUANT TO CONSENT DECREE - REMEDIAL ACTION PLAN SECTION 4.3.5.

UNITED STATES OF AMERICA, ET AL.

VS.

REILLY TAR & CHEMICAL CORPORATION, ET AL.

UNITED STATES DISTRICT COURT DISTRICT OF MINNESOTA CIVIL NO. 4-80-469

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INTRODUCTION

The Consent Decree in the United States of America, et al. vs. Reilly Tar & Chemical Corporation (now known as Reilly Industries, Inc. -- Reilly), et al. (United States District Court, Minnesota, Civil No. 4-80-469) was signed by Judge Magnuson on September 3, 1986 and entered by the Court on the following day. The Effective Date of the Consent Decree is, therefore, September 4, 1986 (see Part EE of the Consent Decree).

Exhibit A (the Remedial Action Plan -- RAP) to, and an integral and enforceable part of, the Consent Decree (per Part F thereof) requires the responsible party to report the results of all monitoring of the Granular Activated Carbon (GAC) treatment system during the previous calendar year in accordance with the provisions of Section 4.3.5. therein. By Agreement between the City of St. Louis Park, Minnesota (City) and Reilly (Reilly/City Agreement) (Exhibit B to, and an integral and enforceable part of the Consent Decree, per Part Q thereof, as to the rights and responsibilities between the City and Reilly) the City is responsible for monitoring the treatment system and submitting the results of said monitoring.

HISTORY OF GRANULAR ACTIVATED CARBON TREATMENT SYSTEM OPERATIONS - 1993 Operation

The City operated the GAC treatment system in substantial compliance with Section 4.2. of the RAP during 1993, treating 424.4 million gallons of water. In correspondence dated December 18, 1992, the City notified the United States Environmental Protection Agency (USEPA), Minnesota Pollution Control Agency (MPCA), and Reilly that the results of fourth quarter 1992 monitoring indicated that the total of Other polynuclear aromatic hydrocarbons (PAH) appeared to exceed the Advisory Level of Other PAH established in Section 2.2 of the RAP, and indicated the GAC treatment system had been removed from service pending GAC replacement. The GAC treatment system was not operated because the system effluent could not be safely redirected from municipal use to surface water. The surface water discharge option was not feasible because the receiving surface water was serving as a Winter-time ice skating rink and treatment system discharge water could melt the ice and cause a mishap. As a result of the treatment system shut down, no discharge occurred in January and February.

The GAC was replaced the week of March 8, 1993 and the treatment system was returned to service on March 14. The lowest monthly pumping total occurred in March as a result of treatment system downtime prior to March 14. The pumping total was 31.0 million gallons (mg). The highest monthly pumping total was experienced in December (49.7 mg).

The GAC treatment system remained in a full time, operational mode until GAC was replaced on November 23 and 24, 1993. The GAC replacement occurred to avoid potential Winter-time conflict between discharge to surface water and its use as an ice skating rink. The treatment system remained in full operation through the end of 1993.

While greater detail relative to monitoring is provided later in this Report, following is a summary of the monthly pumpage volumes which confirms that the City made every effort to meet the intent of RAP Section 4.2.1. (i.e. a minimum of 200 million gallons must be pumped from SLP 10/15 annually and 10 million gallons must be pumped monthly).

		Ireated Water
	<u>Month</u>	Volume (Million Gallons)
	January	00.0
	February	00.0
	March	31.0
	April	46.3
	May	34.9
	June	40.7
	July	44.9
	August	45.5
	September	36.8
	October	47.9
	November	<u>36.9</u>
Subtotal (P	rior to GAC Replace	ment) 364.9
	November	9.8
	December	<u>49.7</u>
Subtotal	(After GAC Replace	ment) 59.5
	Total (Annual Pu	mpage) 424.4

A review of records indicates 409.7 million gallons of water were treated by the system's seventh carbon load between May, 1992 and December, 1992. The eighth carbon load treated 364.9 million gallons of water between March and November, 1993.

Monitoring

The 1993 monitoring program was jointly conducted by the City and Rocky Mountain Analytical Laboratory (RMAL). The City retrieved all samples and RMAL was responsible for analytical services. Laboratory analyses were conducted at the RMAL laboratory in Arvada, Colorado.

The 1993 monitoring schedule, as established in the 1993 Sampling Plan developed in accordance with the requirements of Section 3.3 of the RAP, provided for quarterly monitoring of the treatment system effluent and annual monitoring of the treatment system feed water.

Although the GAC treatment system was replaced in March, 1993, April analyses indicated the GAC may have experienced premature service life exhaustion. Due to a communication error the City's Project leader failed to advise the Parties of the results of the March, 1993 monitoring. Evaluation of third and fourth quarter monitoring (July 27 and October 4, 1993) results indicate the second quarter results were inconsistent and that the system was operating acceptably.

A summary of the 1993 GAC treatment system monitoring is as follows:

RESULTS OF MONITORING OF EIGHTH LOAD OF GAC (SERVICE 3/12/93-11/23/93)

NOTE: ALL REPORTED CONCENTRATIONS ARE IN PARTS PER TRILLION

	GAC FEED	WATER SAMPLES	GAC TREATED	WATER SAMPLES	FIELD BLAN	C/METHOD BLANK
	OTHER	CARCINOGENIC	OTHER	CARCINOGENIC	OTHER	CARCINOGENIC
DATE	PAH TOTAL	PAH TOTAL	PAH TOTAL	PAH TOTAL	PAH TOTAL	PAH TOTAL
03/23/93	NS	NS	22/27	6/1	10/19/7	ND/1/ND
04/27/93	NS	NS	180/211	ND/ND	7/8	ND/ND
07/27/93	NS	NS	69	ND	12/6	ND/ND
08/09/93	2091/2211	ND/ND	NS	NS	6/7	ND/ND
10/04/93	NS	NS	76	ND	7/14	ND/1

ND - Not Detected

- For Field Blank/Method Blank monitoring
 - Indicates Field Blank/Method Blank results

XX/XX/XX - For Field Blank/Method Blank monitoring

- Indicates Field Blank/Method Blank/Method Blank results

NS - Not Sampled

October 5, 1993 monitoring included laboratory analysis of the treated water for an extended list of PAH and acid fractions pursuant to the provisions of Section 4.3.4. of the RAP. No compounds contained in the extended list of PAH or acid fractions were detected.

Results of 1993 monitoring are provided in the accompanying Appendix. R94/apr93



CASE NARRATIVE

FOR

City of St. Louis Park

November 18, 1993

Enseco - RMAL Project Number 031565

Introduction

Six aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on October 06, 1993. The samples were logged in under RMAL project number 031565. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. Sample GAC-SLP10FBDAF-100593 was extracted and held per the April 1990 QAPP. The samples were analyzed for acid fraction part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April, 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

031565-0001MS and -0001SD matrix spike recoveries were outside of advisory limits for 4-Nitrophenol. Quantitation was checked, all other spike recoveries and RPD's were within advisory limits, and no further action was taken.



Case Narrative - RMAL #031565 November 18, 1993 Page Two

This data package is in compliance with the terms and conditions of the $1990\ QAPP$, both technically and for completeness, for other than the conditions detailed above.

Reported by:_

Julieann L. Kramer Program Manager

Approved by: Loven He

Karen Germann Project Administrator Date: 2/00-18 993

Date: Nov 18, 1993



SAMPLE DESCRIPTION INFORMATION for City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date Time	Received Date
031565-0001-SA 031565-0001-DU 031565-0001-MS 031565-0001-SD 031565-0001-FB 031565-0001-FD	GAC-SLP10TAF-100593 GAC-SLP10TDAF-100593 GAC-SLP10TMSAF-100593 GAC-SLP10TMSDAF-100593 GAC-SLP10TFBAF-100593 GAC-SLP10TFBDAF-100593	AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS	05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93	06 OCT 93 06 OCT 93 06 OCT 93 06 OCT 93 06 OCT 93



ANALYTICAL TEST REQUESTS for City of St. Louis Park

Lab ID: 031565	Group Code	Analysis Description	Custom Test?
0001 , 0001	A	CLP/HSL Semivolatile Organics CLP Prep - HSL Semivolatile Organics by GC/MS	N N
0001	В	CLP Prep - HSL Semivolatile Organics by GC/MS	N



Qualifier Codes and Their Usage

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as discussed for the U flag.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater then 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- C = This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do <u>not</u> apply this flag, instead use a laboratory-defined flag, discussed below.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.



- E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. If one or more compounds have a response greater than full scale, except as noted in Exhibit D, the sample or extract must be diluted and re-analyzed accordingly to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number. NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of each peak should be considered separately, e.g., a diluted analysis is not required for total xylenes unless the concentration of either peak separately exceeds 200 ug/L.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.
- A = This flag indicates that a TIC is a suspected aldol-condensation product.
- X = Other specific flags may be required to properly define the results. If used, they must be fully described, and such description attached to the Sample Data Summary Package and the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".
- R = This flag is used for polyaromatic hydrocarbons which show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion.



☐ Rocky Mountain Analytical Laboratory ☐ Enseco Houston 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

1420 East North Suite 120

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Houston, TX 77032 713/987-9767 FAX: 713/987-9769

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SUMMARY

DATA

PACKAGE

FOR

City of SAINT Louis PARK RMAL No: 31565

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

31565-01

0

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0301575.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume: 1(ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

COMPOUND

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

10 108-95-2----Phenol U 111-44-4-----bis(-2-Chloroethyl)Ether Ŭ 10 95-57-8----2-Chlorophenol 10 U 541-73-1----- 3-Dichlorobenzene 10 U 106-46-7-----1 4-dichlorobenzene 10 U 95-50-1-----1 2-Dichlorobenzene 10 U 95-48-7----2-Methylphenol 10 U 108-60-1-----bis (2-Chloroisopropyl) ether 10 U 106-44-5----4-Methylphenol 10 U 621-64-7----N-nitroso-Di-n-propylamine 10 U 67-72-1-----Hexachloroethane 10 U 98-95-3-----Nitrobenzene 10 U 78-59-1-----Isophorone 10 U 88-75-5----2-Nitrophenol 10 U 105-67-9-----2 4-Dimethylphenol U 10 111-91-1-----bis(-2-Chloroethoxy)Methane 10 U 120-83-2----2 4-Dichlorophenol 10 U 120-82-1-----1 2 4-Trichlorobenzene Ū 10 91-20-3-----Naphthalene U 10 106-47-8----4-Chloroaniline U 10 87-68-3------Hexachlorobutadiene 10 U 59-50-7-----4-Chloro-3-Methylphenol 10 U 91-57-6----2-Methylnaphthalene 10 U 77-47-4-----Hexachlorocyclopentadiene 10 U 88-06-2----2 4 6-Trichlorophenol 10 U 95-95-4----2 4 5-Trichlorophenol 10 U 91-58-7----2-Chloronaphthalene 10 U 88-74-4----2-Nitroaniline U 10 131-11-3-----Dimethyl Phthalate U 10 606-20-2----2 6-Dinitrotoluene U 10 U 208-96-8-----Acenaphthylene 10 99-09-2-----3-Nitroaniline 10 U 83-32-9------Acenaphthene 10 U

31565-01

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0301575.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: ____ decanted: (Y/N) ___ Date Extracted:10/07/93

Concentrated Extract Volume: 1 (ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

		,, -	~
	51-28-52 4-Dinitrophenol	10	U
ĺ	100-02-74-Nitrophenol	10	י ט
ļ	121-14-22 4-Dinitrotoluene	10	ָּט
	132-64-9Dibenzofuran	10	ט
i	84-66-2Diethylphthalate	10	U
	86-73-7Fluorene	10	U
	7005-72-34-Chlorophenyl-phenylether	10	ט
	100-01-64-Nitroaniline	10	Ū
	534-52-14 6-Dinitro-2-methylphenol	10	ט ו
ı	86-30-6N-nitrosodiphenylamine (1)	10	ו די
١	101-55-34-Bromophenyl-phenylether	10	ט
ı	118-74-1Hexachlorobenzene	10	ן ד
1	87-86-5Pentachlorophenol	10	ט ו
ı	85-01-8Phenanthrene	10	ן ט
l	120-12-7Anthracene	10	ן ט
l	84-74-2Di-n-Butylphthalate	10	ן די
l	206-44-0Fluoranthene	10	ן ט
١	129-00-0Pyrene	10	ן ט
I	85-68-7Butylbenzylphthalate	10	ן די
l	91-94-13 3'-Dichlorobenzidine	10	ט
ı	56-55-3Benzo(a)Anthracene	10	ן ט
ı	218-01-9Chrysene	10	ן ט
l	117-81-7bis(2-ethylhexyl)Phthalate	10	ן ט
I	117-84-0Di-n-octyl Phthalate	10	ש
İ	205-99-2Benzo (b) fluoranthene	10	ש
Į	207-08-9Benzo(k)fluoranthene	10	ן ט
l	50-32-8Benzo(a)pyrene	10	U
l	193-39-5Indeno(1 2 3-cd)pyrene	10	ש
١	53-70-3Dibenzo(a h)anthracene	10	U
١	191-24-2Benzo(g h i)perylene	10	ן ט
١	86-74-8Carbazole	10	ש
			l

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	31565-01	
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Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0301575.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: ____ decanted: (Y/N) ___ Date Extracted:10/07/93

Concentrated Extract Volume: 1(ml) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		=======		=====
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9	-			
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29.				
30				

1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

31565-01DU

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO

Case No.: 31565 SAS No.:

SDG No.: 31565

Matrix: (soil/water) WATER

Lab Sample ID: 31565-01DU

Sample wt/vol:

1000 (g/mL) ML

Lab File ID: S0601578.D

Level:

(low/med) LOW

Date Received: 10/06/93

% Moisture: decanted: (Y/N)

Date Extracted:10/07/93

Concentrated Extract Volume:

1 (ML)

Date Analyzed: 10/21/93

Injection Volume: 0.0(uL)

CAG NO

COMPOINT

Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/I, or ug/Kg) IIG/I.

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	(ug/L or ug/kg)	UG/L	Q
95-57-8 541-73-1	Phenol bis(-2-Chloroeth 2-Chlorophenol 1 3-Dichlorobenz 1 4-dichlorobenz	ene	10 10 10 10	ט ט ט
95-50-1 95-48-7 108-60-1 106-44-5 621-64-7 67-72-1	1 2-Dichlorobenz2-Methylphenolbis(2-Chloroisop4-MethylphenolN-nitroso-Di-n-pHexachloroethane	ropyl)ether_	10 10 10 10 10	ם מ ט ט
78-59-1 88-75-5 105-67-9 111-91-1 120-83-2	Nitrobenzene Isophorone 2-Nitrophenol 2 4-Dimethylphen bis(-2-Chloroeth 2 4-Dichlorophen	oxy)Methane_ ol	10 10 10 10 10 10	ט ט
91-20-3 106-47-8 87-68-3 59-50-7 91-57-6 77-47-4	Naphthalene 4-Chloroaniline Hexachlorobutadi 4-Chloro-3-Methy 2-Methylnaphthal Hexachlorocyclop	ene lphenol ene entadiene	10 10 10 10 10	ם מ מ
95-95-4 91-58-7 88-74-4 131-11-3 606-20-2	2 4 6-Trichlorop 2 4 5-Trichlorop 2-Chloronaphthal 2-Nitroaniline Dimethyl Phthala 2 6-Dinitrotolue Acenaphthylene	henol ene	10 10 10 10 10 10	ט ט ט ט
99-09-2	3-Nitroaniline		10	ָ ָ ע

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

31565-01DU

0

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01DU

1000 (g/mL) ML Lab File ID: S0601578.D Sample wt/vol:

(low/med) LOW Date Received: 10/06/93 Level:

% Moisture: decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume: Date Analyzed: 10/21/93 1 (ML)

Dilution Factor: 1.0 Injection Volume: 0.0(uL)

COMPOUND

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L 51-28-5-----2 4-Dinitrophenol 10 U 100-02-7----4-Nitrophenol 10 U 121-14-2----2 4-Dinitrotoluene 10 U 132-64-9-----Dibenzofuran 10 U 84-66-2-----Diethylphthalate 10 U 86-73-7----Fluorene 10 U 7005-72-3----4-Chlorophenyl-phenylether U 10 100-01-6-----4-Nitroaniline 10 U 534-52-1----4 6-Dinitro-2-methylphenol 10 U 86-30-6----N-nitrosodiphenylamine (1) 10 U 101-55-3----4-Bromophenyl-phenylether 10 U 118-74-1-----Hexachlorobenzene 10 U 87-86-5----Pentachlorophenol U 10 85-01-8-----Phenanthrene 10 U 120-12-7-----Anthracene 10 Ŭ 84-74-2----Di-n-Butylphthalate 10 U U 206-44-0-----Fluoranthene 10 129-00-0-----Pyrene U 10 85-68-7-----Butylbenzylphthalate 10 U 91-94-1----3 3'-Dichlorobenzidine 10 U 56-55-3-----Benzo (a) Anthracene 10 U 218-01-9-----Chrysene 10 U 117-81-7-----bis(2-ethylhexyl)Phthalate 10 U 117-84-0-----Di-n-octyl Phthalate 10 Ū 205-99-2----Benzo (b) fluoranthene 10 U 207-08-9-----Benzo(k) fluoranthene 10 U 50-32-8-----Benzo (a) pyrene 10 U 193-39-5-----Indeno(1 2 3-cd)pyrene 10 U 53-70-3-----Dibenzo(a h)anthracene U 10 191-24-2----Benzo(g h i)perylene 10 U 86-74-8-----Carbazole U 10

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

31565-01DU

Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01DU

Lab File ID: S0601578.D Sample wt/vol: 1000 (g/mL) ML

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N)___ Date Extracted:10/07/93

Concentrated Extract Volume: 1 (ml) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 1 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 68-12-2 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.	Formamide, N,N-dimethyl-	1	EST. CONC.	
24. 25. 26. 27. 28. 29.				
30				

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

31565-01FB

Q

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01FB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0801580.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume: 1(ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

COMPOUND

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

108-95-2----Phenol 10 IJ 111-44-4-----bis(-2-Chloroethyl)Ether 10 U 95-57-8----2-Chlorophenol 10 U 541-73-1----1 3-Dichlorobenzene 10 U 106-46-7-----1 4-dichlorobenzene_ 10 U 95-50-1-----1 2-Dichlorobenzene 10 U 95-48-7----2-Methylphenol 10 U 108-60-1-----bis(2-Chloroisopropyl)ether 10 U 106-44-5----4-Methylphenol 10 U U 621-64-7----N-nitroso-Di-n-propylamine 10 67-72-1-----Hexachloroethane 10 U 98-95-3-----Nitrobenzene 10 U 78-59-1-----Isophorone 10 U 88-75-5-----2-Nitrophenol 10 U 105-67-9-----2 4-Dimethylphenol 10 U 111-91-1-----bis(-2-Chloroethoxy)Methane 10 U 120-83-2----2 4-Dichlorophenol 10 U 120-82-1-----1 2 4-Trichlorobenzene 10 U 91-20-3-----Naphthalene 10 U 106-47-8-----4-Chloroaniline 10 U 87-68-3-----Hexachlorobutadiene U 10 U 59-50-7----4-Chloro-3-Methylphenol 10 U 91-57-6----2-Methylnaphthalene 10 77-47-4-----Hexachlorocyclopentadiene 10 U 88-06-2----2 4 6-Trichlorophenol Ū 10 95-95-4----2 4 5-Trichlorophenol 10 U Ū 91-58-7----2-Chloronaphthalene 10 88-74-4----2-Nitroaniline 10 U U 131-11-3-----Dimethyl Phthalate 10 606-20-2----2 6-Dinitrotoluene U 10 208-96-8-----Acenaphthylene U 10 99-09-2----3-Nitroaniline 10 U 83-32-9-----Acenaphthene 10 U

31565-01FB

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01FB

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0801580.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: ____ decanted: (Y/N) ___ Date Extracted:10/07/93

Concentrated Extract Volume: 1(ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

	CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
ı				

CONCENTRATION UNITS:

51-28-52 4-Dinitrophenol	10	ט
100-02-74-Nitrophenol	10	Ū
121-14-22 4-Dinitrotoluene	10	ט
132-64-9Dibenzofuran	10	Ū
84-66-2Diethylphthalate	10	Ū
86-73-7Fluorene	10	Ū
7005-72-34-Chlorophenyl-phenylether	10	Ū
100-01-64-Nitroaniline	10	Ū
534-52-14 6-Dinitro-2-methylphenol	10	Ū
86-30-6N-nitrosodiphenylamine (1)	10	Ū
101-55-34-Bromophenyl-phenylether	10	Ū
118-74-1Hexachlorobenzene	10	Ū
87-86-5Pentachlorophenol	10	ŭ
85-01-8Phenanthrene	10	Ū
120-12-7Anthracene	10	Ū
84-74-2Di-n-Butylphthalate	10	υ
206-44-0Fluoranthene	10	Ū
129-00-0Pyrene	10	<u> </u>
85-68-7Butylbenzylphthalate	10	Ū
91-94-13 3'-Dichlorobenzidine	10	Ū
56-55-3Benzo(a) Anthracene	10	Ū
218-01-9Chrysene	10	Ū
117-81-7bis(2-ethylhexyl)Phthalate	10	Ū
117-84-0Di-n-octyl Phthalate	10	Ū
205-99-2Benzo(b) fluoranthene	10	Ū
207-08-9Benzo(k) fluoranthene	10	ប
50-32-8Benzo(a) pyrene	10	Ū
193-39-5Indeno(1 2 3-cd)pyrene	10	Ū
53-70-3Dibenzo(a h)anthracene	10	Ū
191-24-2Benzo(g h i)perylene	10	Ū
86-74-8Carbazole	10	Ū

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

31565-01FB

Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.:

SDG No.: 31565

Matrix: (soil/water) WATER

Lab Sample ID: 31565-01FB

Sample wt/vol: 1000 (g/mL) ML

Lab File ID:

S0801580.D

Level: (low/med) LOW

Date Received: 10/06/93

% Moisture: . decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume:

1 (ml)

Date Analyzed: 10/21/93

Injection Volume: 0.0(uL)

Number TICs found: 1

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
1. 68-12-2 2.	Formamide, N,N-dimethyl-	6.110	6	NJB
4. 5.				
7				
10				
13				
16.				
17. 18. 19.				
21. 22. 23.				
24. 25. 26.				
28.				
29. 30.				

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

31565-01FD

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01FD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0701579.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) ___ Date Extracted:10/07/93

Concentrated Extract Volume: 1(ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

CED NO. COMPOSID (49/11 of 49/	1.5, 00, 1	×
108-95-2Phenol	10	ט
111-44-4bis(-2-Chloroethyl)Ether	10	ן ט
95-57-82-Chlorophenol	10	ן ט
541-73-11 3-Dichlorobenzene	10	บี
106-46-71 4-dichlorobenzene	10	Ŭ
95-50-11 2-Dichlorobenzene	10	<u>"</u>
95-48-72-Methylphenol	10	Ü
108-60-1bis(2-Chloroisopropyl)ether	10	Ū
106-44-54-Methylphenol	10	Ū
621-64-7N-nitroso-Di-n-propylamine	10	Ŭ
67-72-1Hexachloroethane	10	וט
98-95-3Nitrobenzene	10	Ū
78-59-1Isophorone	10	ט
88-75-52-Nitrophenol	10	ט
105-67-92 4-Dimethylphenol	10	ן ט
111-91-1bis(-2-Chloroethoxy)Methane	10	ן ט
120-83-22 4-Dichlorophenol	10	ן ט
120-82-11 2 4-Trichlorobenzene	10	U
91-20-3Naphthalene	10	Ū
106-47-84-Chloroaniline	10	U
87-68-3Hexachlorobutadiene	10	ַ ד
59-50-74-Chloro-3-Methylphenol	10	י ט
91-57-62-Methylnaphthalene	10	[ע
77-47-4Hexachlorocyclopentadiene	10	ש
88-06-22 4 6-Trichlorophenol	10	ט
95-95-42 4 5-Trichlorophenol	10	[ע
91-58-72-Chloronaphthalene	10	[ד
88-74-42-Nitroaniline	10	U
131-11-3Dimethyl Phthalate	10	U
606-20-22 6-Dinitrotoluene	10	U
208-96-8Acenaphthylene	10	ע
99-09-23-Nitroaniline	10	ַ ע
83-32-9Acenaphthene	10	ע

EPA SAMPLE NO.

31565-01FD

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01FD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0701579.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume: 1(ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

51-28-52 4-Dinitrophenol	10	ט
100-02-74-Nitrophenol	10	Ū
121-14-22 4-Dinitrotoluene	10	ט
132-64-9Dibenzofuran	10	ט
84-66-2Diethylphthalate	10	ע
86-73-7Fluorene	10	ט ו
7005-72-34-Chlorophenyl-phenylether	10	Ū
100-01-64-Nitroaniline	10	ט
534-52-14 6-Dinitro-2-methylphenol	10	บ
86-30-6N-nitrosodiphenylamine (1)	10	ט
101-55-34-Bromophenyl-phenylether	10	ט ו
118-74-1Hexachlorobenzene	10	ט ו
87-86-5Pentachlorophenol	10	ט
85-01-8Phenanthrene	10	U
120-12-7Anthracene	10	ี ซ
84-74-2Di-n-Butylphthalate	10	ט
206-44-0Fluoranthene	10	ט
129-00-0Pyrene	10	U U
85-68-7Butylbenzylphthalate	10	ט
91-94-13 3'-Dichlorobenzidine	10	ט
56-55-3Benzo (a) Anthracene	10	ט
218-01-9Chrysene	10	U
117-81-7bis(2-ethylhexyl)Phthalate	10	ט
117-84-0Di-n-octyl Phthalate	10	ש
205-99-2Benzo (b) fluoranthene	10	ָּט
207-08-9Benzo(k) fluoranthene	10	· U
50-32-8Benzo (a) pyrene	10	U
193-39-5Indeno(1 2 3-cd)pyrene	10	U
53-70-3Dibenzo(a h)anthracene	10	U
191-24-2Benzo(g h i)perylene	10	U
86-74-8Carbazole	10	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

31565-01FD

Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: 31565-01FD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0701579.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume: 1(ml) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER RT COMPOUND NAME EST. CONC. 0 9.__ 10. ____ 11. 12. 13. 14.__ 15.___ 16.___ 17.____ 18. 19. _ 20. 21.__ 22. _ 23.____ 24. 25. 26.__ 27.__ 28.__ 29.____ 30.

31565-01MS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31510 SAS No.: SDG No.: 31510

Matrix: (soil/water) WATER Lab Sample ID: 31565-01MS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0401576.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume: 1(ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

108-95-2----Phenol 53 111-44-4-----bis(-2-Chloroethyl)Ether Ū 10 95-57-8----2-Chlorophenol 52 541-73-1----1 3-Dichlorobenzene Ū 10 106-46-7-----1 4-dichlorobenzene 24 95-50-1-----1 2-Dichlorobenzene 10 Ū 95-48-7----2-Methylphenol 10 U 108-60-1-----bis(2-Chloroisopropyl)ether 10 U 106-44-5----4-Methylphenol 10 Ü 621-64-7----N-nitroso-Di-n-propylamine 38 67-72-1------Hexachloroethane Ū 10 98-95-3-----Nitrobenzene 10 U 78-59-1-----Isophorone 10 U 88-75-5----2-Nitrophenol U 10 105-67-9-----2 4-Dimethylphenol U 10 111-91-1-----bis(-2-Chloroethoxy)Methane U 10 120-83-2----2 4-Dichlorophenol 10 U 120-82-1-----1 2 4-Trichlorobenzene 25 91-20-3----Naphthalene Ū 10 106-47-8-----4-Chloroaniline 10 U 87-68-3-----Hexachlorobutadiene 10 U 59-50-7----4-Chloro-3-Methylphenol 62 91-57-6----2-Methylnaphthalene 10 Ū 77-47-4-----Hexachlorocyclopentadiene 10 U 88-06-2----2 4 6-Trichlorophenol Ū 10 95-95-4-----2 4 5-Trichlorophenol U 10 91-58-7----2-Chloronaphthalene 10 U 88-74-4----2-Nitroaniline U 10 131-11-3-----Dimethyl Phthalate 10 U 606-20-2----2 6-Dinitrotoluene 10 U 208-96-8------Acenaphthylene 10 Ŭ 99-09-2----3-Nitroaniline 10 U 83-32-9-----Acenaphthene 35

31565-01MS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31510 SAS No.: SDG No.: 31510

Matrix: (soil/water) WATER Lab Sample ID: 31565-01MS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0401576.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: ____ decanted: (Y/N)___ Date Extracted:10/07/93

Concentrated Extract Volume: 1 (ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

51-28-52 4-Dinitrophenol	10	U
100-02-74-Nitrophenol	64	
121-14-22 4-Dinitrotoluene	42	
132-64-9Dibenzofuran	10	U
84-66-2Diethylphthalate	10	Ū
86-73-7Fluorene	10	Ū
7005-72-34-Chlorophenyl-phenylether	10	Ŭ
100-01-64-Nitroaniline	10	<u>"</u>
534-52-14 6-Dinitro-2-methylphenol	10	<u>ט</u>
86-30-6N-nitrosodiphenylamine (1)	10	Ü
101-55-34-Bromophenyl-phenylether	10	Ü
118-74-1Hexachlorobenzene	10	Ū
87-86-5Pentachlorophenol	59	
85-01-8Phenanthrene	10	U
120-12-7Anthracene	10	Ū
84-74-2Di-n-Butylphthalate	10	Ū
206-44-0Fluoranthene	10	ט
129-00-0Pyrene	43	
85-68-7Butylbenzylphthalate	10	Ū
91-94-13 3'-Dichlorobenzidine	10	ט
56-55-3Benzo (a) Anthracene	10	ט (
218-01-9Chrysene	10	ט ו
117-81-7bis(2-ethylhexyl)Phthalate	1	J
117-84-0Di-n-octyl Phthalate	10	ט
205-99-2Benzo (b) fluoranthene	10	ט
207-08-9Benzo (k) fluoranthene	10	ט
50-32-8Benzo (a) pyrene	10	ט
193-39-5Indeno(1 2 3-cd)pyrene	10	Ū
53-70-3Dibenzo(a h)anthracene	10	ט
191-24-2Benzo(g h i)perylene	10	ט
86-74-8Carbazole	10	ט

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

31565-01MSD

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31510 SAS No.: SDG No.: 31510

Matrix: (soil/water) WATER Lab Sample ID: 31565-01MSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0501577.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: ____ decanted: (Y/N)___ Date Extracted:10/07/93

Concentrated Extract Volume: 1 (ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:
POUND (ug/L or ug/Kg) UG/L O

CAS NO.	COMPOUND	(ug/L or u	g/Kg) UG/L		Q
108-95-2	Phenol			60	
	bis(-2-Chlore			10	Ū
	2-Chloropheno			59	
	1 3-Dichlorob		<u> </u>	10	Ū
	1 4-dichlorok		_	29	<u> </u>
	1 2-Dichlorob		_	10	ַ ע
	2-Methylpheno			10	ט ו
	bis(2-Chloroi			10	ט
106-44-5	4-Methylpheno	01		10	ט
621-64-7	N-nitroso-Di-	n-propylamine	_]	42	
67-72-1	Hexachloroeth	ane		10	<u>י</u>
98-95-3	Nitrobenzene_			10	Ū
78-59-1	Isophorone			10	ט
88-75-5 	2-Nitrophenol		_	10	ט
	2 4-Dimethylp		_	10	ט
	bis(-2-Chloro			10	U
120-83-2	2 4-Dichlorop	henol	_	10	U
	1 2 4-Trichlo	robenzene		26	
	Naphthalene			10	บ
	4-Chloroanili			10	ט
	Hexachlorobut			10	ט
	4-Chloro-3-Me			67	
	2-Methylnapht			10	U
	Hexachlorocyc			10	U
88-06-2	2 4 6-Trichlo	rophenol	_	10	U
95-95-4	2 4 5-Trichlo	rophenol	-	10	U
	2-Chloronapht		_	10	ט
88-74-4	2-Nitroanilin	e	_	10	U
.131-11-3	Dimethyl Phth	alate	_	10	U
	2 6-Dinitroto		_	10	บ
	Acenaphthylen		_	1	J
	3-Nitroanilin		_	10	U
	Acenaphthene		-	36	!
			-		
			_ '		

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

31565-01MSD

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31510 SAS No.: SDG No.: 31510

Matrix: (soil/water) WATER Lab Sample ID: 31565-01MSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0501577.D

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) Date Extracted:10/07/93

Concentrated Extract Volume: 1 (ML) Date Analyzed: 10/21/93

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

	· · · · · · · · · · · · · · · · · · ·	
51-28-52 4-Dinitrophenol	10	ט
100-02-74-Nitrophenol	70	
121-14-22 4-Dinitrotoluene	45	
132-64-9Dibenzofuran	10	Ū
84-66-2Diethylphthalate	10	ט ו
86-73-7Fluorene	10	U
7005-72-34-Chlorophenyl-phenylether	10	U
100-01-64-Nitroaniline	10	ט
534-52-14 6-Dinitro-2-methylphenol	10	บ
86-30-6N-nitrosodiphenylamine (1)	10	ט
101-55-34-Bromophenyl-phenylether	10	U
118-74-1Hexachlorobenzene	10	ט
87-86-5Pentachlorophenol	64	
85-01-8Phenanthrene	10	<u>י</u>
120-12-7Anthracene	10	ן די
84-74-2Di-n-Butylphthalate	10	ש
206-44-0Fluoranthene	10	Ŭ
129-00-0Pyrene	46	
85-68-7Butylbenzylphthalate	10	Ū
91-94-13 3'-Dichlorobenzidine	10	U
56-55-3Benzo (a) Anthracene	10	U
218-01-9Chrysene	10	U
117-81-7bis(2-ethylhexyl)Phthalate	10	U
117-84-0Di-n-octyl Phthalate	10	U
205-99-2Benzo (b) fluoranthene	10	U
207-08-9Benzo(k) fluoranthene	10	U
50-32-8Benzo(a)pyrene	10	Ū
193-39-5Indeno(1 2 3-cd)pyrene	10	Ŭ
53-70-3Dibenzo(a h)anthracene	10	Ū
191-24-2Benzo(g h i)perylene	10	Ū
86-74-8Carbazole	10	Ū

2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Rocky Mountain Analytical Contract:

SDG No.: 31565 Lab Code: ENSECO Case No.: 31565 SAS No.:

EPA S1 (S2 S3 S4 S5 (2FP)# # (2CP)# (DCB)# ===================================	TOT OUT 0 0 0 0 0
01 SBLK01 74 71 68 89 74 75 72 80 02 31565-01 66 58 73 91 82 82 78 76 03 31565-01MS 68 58 73 80 69 89 64 63 04 31565-01DU 75 67 77 89 80 88 80 75 05 31565-01DU 77 78 76 96 79 83 75 84 06 31565-01FD 69 59 70 90 78 81 75 67 07 07 31565-01FB 78 74 78 95 82 74 77 80 08 09	0 0 0 0
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			QC LIMITS	
S1	(NBZ)	= Nitrobenzene-d5	(35-114)	
S2	(FBP)	= 2-Fluorobiphenyl	(43-116)	
S3	(TPH)	= Terphenyl-d14	(33-141)	
S4	(PHL)	= Phenol-d5	(10-110)	
S5	(2FP)	= 2-Fluorophenol	(21-110)	
S6		= 2 4 6-Tribromophenol	(10-123)	
S7	(2CP)	= 2-Chlorophenol-d4	(33-110)	(advisory)
S8	(DCB)	= 1,2-Dichlorobenzene-d4	(16-110)	(advisory)

[#] Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

3C WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO

Case No.: 31565 SAS No.:

SDG No.: 31565

Matrix Spike - EPA Sample No.: 31565-01

	SPIKE	SAMPLE	MS	MS	QC.
	ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
COMPOUND	(ug/L)	(ug/L)	(ug/L)	REC #	REC.
=======================================	=======	=========	=======================================		
Phenol	75	0	53	71	12-110
2-Chlorophenol	75	0	52	69	27-123
1 4-dichlorobenzene	50	0	24	47	36- 97
N-nitroso-Di-n-prop.(1)	50	0	38	76	41-116
1 2 4-Trichlorobenzene	50	0	25	49	39- 98
4-Chloro-3-Methylphenol	75	0	62	83	23- 97
Acenaphthene	50	0	35	71	46-118
4-Nitrophenol	75	0	64	86*	10- 80
2 4-Dinitrotoluene	50	0	42	84	24- 96
Pentachlorophenol	75	0	59	78	9-103
Pyrene	50	0	43	86	26-127

	SPIKE	MSD	MSD				
	ADDED	CONCENTRATION	8	8	QC LIMITS		
COMPOUND	(ug/L)	(ug/L)	REC #	RPD #	RPD	REC.	
=======================================	=======		=====	=====	=====		
Phenol	75	60	80	12	42	12-110	
2-Chlorophenol	75	59	79	14	40	27-123	
1 4-dichlorobenzene	50	29	58	21	28	36- 97	
N-nitroso-Di-n-prop.(1)	50	42	84	10	38	41-116	
1 2 4-Trichlorobenzene	50	26	53	8	28	39- 98	
4-Chloro-3-Methylphenol	75	67	89	7	42	23- 97	
Acenaphthene	50	36	72	1	31	46-118	
4-Nitrophenol	75	70	93*	8	50	10- 80	
2 4-Dinitrotoluene	50	45	90	7	38	24- 96	
Pentachlorophenol	75	64	86	10	50	9-103	
Pyrene	. 50	46	92	7	31	26-127	
						l	

(1) N-Nitroso-di-n-propylamine

#	Column	to	be	used	to	flaq	recovery	r and	RPD	values	with	an	asterisk
---	--------	----	----	------	----	------	----------	-------	-----	--------	------	----	----------

RPD: 0 out of 11 outside limits

Spike Recovery: 2 out of 22 outside limits

COMMENTS:					

^{*} Values outside of QC limits

SBLK01

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Lab File ID: S0101573.D Lab Sample ID: SBLK01

Instrument ID: S Date Extracted: 10/07/93

Matrix: (soil/water) WATER Date Analyzed: 10/21/93

Level: (low/med) LOW Time Analyzed: 1019

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD

	EPA	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
01	31565-01	31565-01	S0301575.D	10/21/93
02	31565-01 31565-01MS	31565-01 31565-01 M S	S0401576.D	10/21/93
03	31565-01MSD	31565-01MSD	S0501577.D	10/21/93
04	31565-01DU	31565-01DU	S0601578.D	10/21/93
05	31565-01FD	31565-01FD	S0701579.D	10/21/93
06	31565-01FB	31565-01FB	S0801580.D	10/21/93
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COMMENTS:				
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLK01

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Case No.: 31565 SAS No.: SDG No.: 31565 Lab Code: ENSECO

Matrix: (soil/water) WATER Lab Sample ID: SBLK01

1000 (g/mL) ML Lab File ID: Sample wt/vol: S0101573.D

Level: (low/med) LOW Date Received: 10/06/94

decanted: (Y/N) % Moisture: Date Extracted:10/07/93

1 (ML) Concentrated Extract Volume: Date Analyzed: 10/21/93

Dilution Factor: 1.0 Injection Volume: 0.0(uL)

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L 0 108-95-2----Phenol 10 U 111-44-4-----bis(-2-Chloroethyl)Ether 10 U 95-57-8----2-Chlorophenol 10 U 541-73-1----1 3-Dichlorobenzene 10 U 106-46-7-----1 4-dichlorobenzene 10 U 95-50-1-----1 2-Dichlorobenzene 10 U 95-48-7----2-Methylphenol 10 U 108-60-1-----bis(2-Chloroisopropyl)ether 10 U 106-44-5----4-Methylphenol 10 U U 621-64-7----N-nitroso-Di-n-propylamine 10 67-72-1-----Hexachloroethane 10 U 98-95-3-----Nitrobenzene 10 Ū 78-59-1-----Isophorone 10 U 88-75-5----2-Nitrophenol 10 U 105-67-9-----2 4-Dimethylphenol 10 U 111-91-1-----bis(-2-Chloroethoxy)Methane 10 U 120-83-2----2 4-Dichlorophenol U 10 120-82-1-----1 2 4-Trichlorobenzene U 10 91-20-3----Naphthalene 10 U 106-47-8-----4-Chloroaniline 10 U 87-68-3-----Hexachlorobutadiene U 10 59-50-7----4-Chloro-3-Methylphenol U 10 U 91-57-6----2-Methylnaphthalene 10 U 77-47-4-----Hexachlorocyclopentadiene 10 U 88-06-2----2 4 6-Trichlorophenol 10 95-95-4----2 4 5-Trichlorophenol 10 U 91-58-7----2-Chloronaphthalene 10 U U 88-74-4----2-Nitroaniline 10 131-11-3-----Dimethyl Phthalate 10 U 606-20-2----2 6-Dinitrotoluene 10 U 208-96-8-----Acenaphthylene 10 U 99-09-2----3-Nitroaniline 10 U 83-32-9-----Acenaphthene 10 U

EPA SAMPLE NO.

SBLK01

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.:

SDG No.: 31565

Matrix: (soil/water) WATER

Lab Sample ID: SBLK01

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: S0101573.D

Level: (low/med) LOW

Date Received: 10/06/94

% Moisture: decanted: (Y/N)___

Date Extracted:10/07/93

Concentrated Extract Volume: 1 (ML)

Date Analyzed: 10/21/93

Injection Volume: 0.0(uL)

Dilution Factor: 1.0

CONCENTRATION UNITS:

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	(ug/L or	ug/Kg) UG/I		Q
51-28-5	2 4-Dinitrophe	nol		10	ש
100-02-7	4-Nitrophenol			10	บ
	2 4-Dinitrotol	uene		10	U
	Dibenzofuran			10	Ū
	Diethylphthala	te		10	U
	Fluorene_			10	U
7005-72-3	4-Chlorophenyl	-phenylether	?	10	U
	4-Nitroaniline			10	Ū
534-52-1	4 6-Dinitro-2-	methylphenol	. <u> </u>	10	Ŭ
86-30-6	N-nitrosodiphe	nylamine (1)		10	U
101-55-3	4-Bromophenyl-	phenylether_		10	U
	Hexachlorobenz			10	U
	Pentachlorophe	nol		10	U
	Phenanthrene			10	U
	Anthracene			10	Ŭ
84-74-2	Di-n-Butylphth	alate	<u> </u>	10	Ŭ
	Fluoranthene			10	U
129-00-0				10	U
	Butylbenzylpht			10	U
	3 3'-Dichlorob			10	U
	Benzo (a) Anthra	cene		10	U
	Chrysene			10	U
117-81-7	bis(2-ethylhex	yl)Phthalate	<u> </u>	10	U
117-84-0	Di-n-octyl Pht	halate		10	U
	Benzo(b) fluora			10	ט
	Benzo(k) fluora	nthene		10	U
	Benzo(a)pyrene			10	ប
	Indeno(1 2 3-c		1	10	บ
	Dibenzo(a h)an			10	U
	·Benzo(g h i)pe	rylene		10	บ
86-74-8	Carbazole		1	10	ַ

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SBLK01

Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Matrix: (soil/water) WATER Lab Sample ID: SBLK01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: S0101573.D

Level: (low/med) LOW Date Received: 10/06/94

% Moisture: _____ decanted: (Y/N)___ Date Extracted:10/07/93

1(ml) Date Analyzed: 10/21/93 Concentrated Extract Volume:

Injection Volume: 0.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 1 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 68-12-2 2.	Formamide, N,N-dimethyl-	6.089	9	NJ
4. 5.				
6. 7. 8.				
9. 10. 11.				
12. 13.				
14. 15. 16.				
17. 18. 19.				
20. 21. 22.				
23. 24. 25.				
27.				
28. 29. 30.				

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Lab File ID (Standard): S0572.D Date Analyzed: 10/21/93

Instrument ID: S Time Analyzed: 0834

	IS1		IS2 (NPT)		IS3 (ANT)	<u> </u>
	AREA #	RT #	AREA #	RT #	AREA #	RT #
==========	========	======	========	======	========	======
12 HOUR STD	183965	9.19	660839	10.82	284493	12.93
UPPER LIMIT	367930	9.69	1321678	11.32	568986	13.43
LOWER LIMIT	91982	8.69	330420	10.32	142246	12.43
=========	=======	======	=======	======		======
EPA SAMPLE		:		l		
No.						
========	========	======	========	======	========	======
01 SBLK01	184327	9.19	609047	10.80	290451	12.93
02 31565-01	178597	9.19	669511	10.82	297724	12.93
03 31565-01MS	185356	9.19	654406	10.82	282646	12.93
04 31565-01MSD	175156	9.20	617976	10.82	276727	12.93
05 31565-01DU	172784	9.19	605599	10.82	272807	12.93
06 31565-01FD	174763	9.20	604855	10.82	287783	12.93
07 31565-01FB	171813	9.20	589570	10.82	286751	12.93
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IS1 = 1 4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = + 0.50 minutes of internal standard RT RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

* Values outside of QC limits.

8C SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Rocky Mountain Analytical Contract:

Lab Code: ENSECO Case No.: 31565 SAS No.: SDG No.: 31565

Lab File ID (Standard): S0572.D Date Analyzed: 10/21/93

Instrument ID: S Time Analyzed: 0834

		IS4 (PHN)		IS5 (CRY)		IS6 (PRY)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	RE========	=======	======	=======	======	========	======
	12 HOUR STD	421526	14.62	246707	17.54	273345	20.40
	UPPER LIMIT	843052	15.12	493414	18.04	546690	20.90
	LOWER LIMIT	210763	14.12	123354	17.04	136672	19.90
	======================================	========	======	=======		========	======
	EPA SAMPLE No.						
	2=========	========	======	========	======	========	======
01	SBLK01	422958	14.62	268953	17.54	259595	20.42
02	31565-01	435203	14.62	283796	17.53	290397	20.40
03	31565-01MS	422175	14.62	265223	17.53	282416	20.41
04	31565-01MSD	410645	14.62	249576	17.54	259883	20.40
05	31565-01DU	392855	14.62	264046	17.54	266702	20.42
06	31565-01FD	445064	14.62	282184	17.54	293306	20.42
07	31565-01FB	389439	14.62	256250	17.54	253841	20.41
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IS4 (PHN) = Phenanthrene-d10 IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = + 0.50 minutes of internal standard RT RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

* Values outside of QC limits.





CASE NARRATIVE

FOR

City of St. Louis Park

April 23, 1993

Enseco - RMAL Project Number 028257

Introduction

Seven aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on March 24, 1993. The samples were logged in under RMAL project number 028257. Sample GAC-SLP1SFBD-032393 was extracted and held per the April 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April, 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Sample 028257-0004, showed a surrogate which exceeded the upper control limit. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recoveries. This interference does not affect the quantitation of target components.



Case Narrative - RMAL #028257 April 23, 1993 Page Two

28257-0001MS/SD matrix spike percent recovery for Quinoline, and Benzo(E)Pyrene were reported outside of OC limits due to an interference present in the sample. Quantitation was checked and no further action was taken.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation. therefore they were not used as the upper range for the 5-point calibration curve. Instead, the calibration curve used was, 20 ng/ml, 40 ng/ml, 240 ng/ml, 600 ng/ml, and 1200 ng/ml.

All samples associated with project 028257 show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the letter (R) on the data sheets (Form I) as per the 1990 OAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

> Reported by: ulieann L'. Kramer

Program/Manager

Date: 4/5/93

Approved by

Randy Greaves

Program'Manager



SAMPLE DESCRIPTION INFORMATION for City of St. Louis Park

		Samp	led	Received	
Lab ID	Client ID	Matrix	Date	Time	Date
028257-0001-SA 028257-0001-DU 028257-0001-MS 028257-0001-SD 028257-0001-FB 028257-0001-FD 028257-0002-SA	GAC-SLP15T-032393 GAC-SLP15TD-032393 GAC-SLP15MS-032393 GAC-SLP15MSD-032393 GAC-SLP15FB-032393 GAC-SLP15FBD-032393 GAC-SLP4T-032393	AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS	23 MAR 9: 23 MAR 9: 23 MAR 9: 23 MAR 9: 23 MAR 9: 23 MAR 9: 23 MAR 9:	3 3 3 3	24 MAR 93 24 MAR 93 24 MAR 93 24 MAR 93 24 MAR 93 24 MAR 93 24 MAR 93



ANALYTICAL TEST REQUESTS for City of St. Louis Park

Lab ID: 028257	Group Code	Analysis Description	Custom Test?	
0001 , 0001, 0002	Α	Polynuclear Aromatic Hydrocarbons, SIM Low Level Prep - PAH/SIM by GC/MS Low Level	N N	
0001	В	Prep - PAH/SIM by GC/MS Low Level	N	



Qualifier Codes and Their Usage

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as discussed for the U flag.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater then 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- C = This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do <u>not</u> apply this flag, instead use a laboratory-defined flag, discussed below.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.

- E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. If one or more compounds have a response greater than full scale, except as noted in Exhibit D, the sample or extract must be diluted and re-analyzed accordingly to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number. NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of each peak should be considered separately, e.g., a diluted analysis is not required for total xylenes unless the concentration of either peak separately exceeds 200 ug/L.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.
- A = This flag indicates that a TIC is a suspected aldol-condensation product.
- X = Other specific flags may be required to properly define the results. If used, they must be fully described, and such description attached to the Sample Data Summary Package and the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".
- R = This flag is used for polyaromatic hydrocarbons which show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion.



☐ Rocky Mountain Analytical Laboratory ☐ Enseco Houston 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FA

1420 East North Belt Drive Suite 120 Houston TX 77032

CHAIN OF CUSTODY ENSECO CLIENT CITY OF ST LOUIS PARK (WATER PEPT) PROJECT SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY CONDITION OF CONDITION O	OF CONTENTS NTENTS TEMP. OC.	
ENSECO CLIENT PACKED BY SEAL NUMBE	OF CONTENTS	
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DATE TIME SAMPLE ID/DESCRIPTION SAMPLE TYPE # CONTAINERS ANALYSIS PARAMETERS	REMARKS	
Noc Noc		
3-23-93 BAC-51P 15 M5 -032393 01 MS IXL AMBER 6 PPT PAH PP	5	
3-23-93 6AC-51P 15 M5D-032393 0150 IXLAIDER 6 PPT PAH PP	T 5	
	<u> </u>	
	•	
		
	·	
CUSTODY TRANSFERS PRIOR TO SHIPPING SHIPPING		
DELIVERED TO SHIPPER BY	····	
RELINQUISHED BY (SIGNED) RECEIVED BY (SIGNED) DATE TIME THE THE		
METHOD OF SHIPMENT AIRBILL NUI		
RECEIVED FOR LAB SIGNED	57X()G/G	سده
ENSECO PROJECT NUMBER alexandre C. Hell	13 420 6 1 6 10 DATE/TIME OBLI 10 TYMIRS	45 3
ENSECO PROJECT NUMBER	- 1- 12-(4/5-)	



□ Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171
□ Enseco Houston
1420 East North
Suite 120
Houston, TX 770

Enseco Houston
1420 East North Belt Drive
Suite 120
Houston, TX 77032
713/987-9767 FAX: 713/987-9769

CHAIN OF CUSTODY						713/987-9767 FAX: 713/987-9769						
						SAMPLE SAFE ^{IM} CONDITIONS						
ENSECO CLIENT	_		0.11		_	PACKED BY				SEAL NUMBER		
PROJECT	OF 51	20015	PARK (WATER	DEST.	<u>ر</u>	SEAL INTAC	T UPON RECEIPT B	Y SAMPLING COMP	ANY	CONDITION OF CONT	FNTS	
,				-								
SAMPLING COMPA	NY					SEALED FOR	SHIPPING BY	 · · · · · · · · · · · · · · · · · 		INITIAL CONTENTS TE	MP.	
	SAME								•			°C
SAMPLING SITE	3 11116					SEAL NUMB	ER		NG STATUS			
3	ANE							□□	one 🔲 Contir	nuing Until		
TEAM LEADER	_						T UPON RECEIPT E		CONTENTS TO	EMPERATURE UPON REC	_	
	328					Yes Yes			9	.5	°C	
DATE	TIME		SAMPLE ID/DESCRIPTION		SAMI	PLE TYPE	# CONTAINERS	ANALYSIS	PARAMETERS	RE	MARKS	
3-23-93		GAC-51	0157-032393	01	IXLA	MOER	6	PPZ	PAH	PPZ.	5	
3-23-93		BAC-5L	P15TD-032393	0104	IXLA	MOER	6	PPT	PAH	PPT	5	- · · · · -
	-											
					<u> </u>	··-·						
									J 			
	-											
					<u> </u>	i		· · · · · · · · · · · · · · · · · · ·				
		CUSTODY TRAN	SFERS PRIOR TO SHIPPING						SHIPPING DETAIL	S .		
RELINQUI	ISHED BY (SIG	NED)	RECEIVED BY (SIGNED)	DATE	TIME	DELIVERED METHOD OF	TO SHIPPER BY					
					-		_	•		210342	0616	-
						RECEIVED F	OR LAB	AL SIGNED	fandrat	AIRBILL NUMBER 210342 Hall	DATE/TIME TYMA	<i>∞</i> 45 Γ93
						LNSECO PR	OJECT NUMBER	•	028255	7		
ENS-4011				White	<u>-</u> ۲	Pink -	LAB	 				



☐ Rocky Mountain Analytical Laboratory ☐ Enseco Houston 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

1420 East North Belt Drive Suite 120 Houston, TX 77032

CHAIN OF CUSTODY								ning Company 713/98						713/987-9769
							SAMPLE SAFE TM CONDITIONS							
ENSECO CLIENT			<i>a u l</i>				PACKED BY	. ~ ~ ~ ~				SEAL NUMBER		
PROJECT	<u> 57</u>	LOUIS	PARK (SHIER DE			SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY					CONDITION OF CO	NTENTS	
SAMPLING COMPANY	,						SEALED FOR	SHIPPING BY				INITIAL CONTENTS	TEMP.	
5 A	INE						i							°C
SAMPLING SITE							SEAL NUMBE	ER		SAMPLING STATU	_			
5A)	ME						OF AL INITIAL OF			☐ Done	Continu			<u> </u>
TEAM LEADER	124						Yes	T UPON RECEIPT E	No.		CONTENTS TEL	S TEMPERATURE UPON RECEIPT BY LAB.		
DATE	TIME		SAMPLE ID/DESC	RIPTION		SAMP	LE TYPE	# CONTAINERS	AN	ALYSIS PARA	AETERS		REMARKS	
3-23-93		GNC-	51 P15 FB-	032393	OIFB	IXL A	MAER	6	pp	T PAH	,	PPZ	5	
3-23-93		GAC-S	54 P 15 FB-	032393	OIFED	IXL A	MOER	6	pp	T PAH		PPT.		
							-							<u> </u>
							-							
				· · · · · · · · · · · · · · · · · · ·										
				<u> </u>					-				-	
,											· · · · · · · · · · · · · · · · · · ·			
		CUSTODY TRA	NSFERS PRIOR TO SH	IIPPING		<u> </u>	Ī	<u> </u>		SHIPPII	NG DETAILS	<u> </u>	==	
RELINQUISHED BY (SIGNED) RECEIVED BY (SIGNED) DATE T				TIME	DELIVERED TO SHIPPER BY METHOD OF SHIPMENT AIRBILL NUMBER									
						•		SHIPMENT OR LAB				aireill number	30616	
							ENSECO PRO	OR LAB OJECT NUMBER	الـ	SIGNED	dre E	Hel	Z4M	AR93



☐ Rocky Mountain Analytical Laboratory ☐ Enseco Houston 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

1420 East North Belt Drive Suite 120 Houston, TX 77032

CHAIN OF	CUSTO	אחע			A Corni	orning Company 713/987-9767 FAX: 713/987-9769						
CHAIN OF	0031	<i>,</i>				SAMPLE SAFE™ CONDITIONS						
ENSECO CLIENT PROJECT	-57	Louis	PARK (WAT	ER DEPT	ر_ر	PACKED BY	J &			SEAL NUMBER CONDITION OF CONTENTS		
SAMPLING COMPAN	 			· · · ·			R SHIPPING BY			INITIAL CONTENTS	TEMP	
						JEALES (O.	C STUFFING BY			INMAE CONTENTS	°C	
SAMPLING SITE	MME					SEAL NUMBI	ER	1	MPLING STATUS Done Contin	uina Until		
TEAM LEADER	AME					SEAL INTAC	T UPON RECEIPT B			MPERATURE UPON R	ECEIPT BY LAB.	
24.	294			· · · · · · · · · · · · · · · · ·		☑ Yes					35 ℃	
DATE	TIME		SAMPLE ID/DESCRIPTION		SAMP	LE TYPE	# CONTAINERS	ANAL	YSIS PARAMETERS		REMARKS	
3-23-93		GAC-	5LP4T -032393	02	186 1	MOSE	6	PP7	PAH	PP	75	
3-23-93			56P4PP-032393	oL	8 gg H	MOER MOER	/	Phe	ENDLES (1975	52)		
												
					<u> </u>						· · · · · · · · · · · · · · · · · · ·	
												
										·		
												
				- 	<u>l. </u>							
		CUSTODY T	RANSFERS PRIOR TO SHIPPING			<u> </u>			SHIPPING DETAILS	S		
RELINQUI	SHED BY (SIC	GNED)	RECEIVED BY (SIGNED)	DATE	TIME		TO SHIPPER BY			TAIRBILL NUMBER		
						1	DEX OR LAB	Teir	GNED	· ·	DATE/TIME OF S	
				-			OJECT NUMBER	1 7	Elexandra	Hell	ZYMAR93	



TABLE OF CONTENTS FOR CITY OF ST. LOUIS PARK RMAL PROJECT# 028257

PPT-PAH

QC Summary	0001
Sample Data	0013
Standards Data	0217
Raw QC Data	0620



PACKAGE

FOR

CITY OF SAINT LOUIS PARK BUAL NO: 28257

Name: ENSECO Contract:

| |-----

28257-01

GAC-SLP15T-032393

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28257-01

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7521

Level: (low/med) LOW Date Received: 03/24/93

% Moisture: decanted: (Y/N) N Date Extracted: 03/26/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/16/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

ond no.	(2	9/ 25 01 0	9/ -19/ -19/	,	×
271-89-6	2,3-Dibenzofuran			5	U
496-11-7	2.3-Dihydroindene		-1	2	В
95-13-6	2,3-Dihydroindene		-	0.9	
91-20-3	Naphthalene		- (3	BJ
4565-32-6	Benzo(B)Thiophene	· <u> </u>	-1	0.9	
91-22-5	Quinoline		-	√1	ט
120-72-9	îH-Indole		-1	2	ט
91-57-6	2-Methylnaphthalene		-	2	В
90-12-0	1-Methylnaphthalene		-	2	U
92-52-4	Biphenvl		-	4	Ū
208-96-8	Acenaphthylene		-	1	JR
83-32-9	Acenaphthene		-	2	
132-64-9	Dibenzofuran		-	1	R
86-73-7	Fluorene		_	2	[
132-65-0	Dibenzothiophene		- j	1	U
85-01-8	Phenanthrene		-	3	В
120-12-7	Anthracene		-	1	J
260-94-6	Acridine		-	3	U
86-74-8	Carbazole		- (2	ับ
206-44-0	Fluoranthene		-)	2 2 2	В
129-00-0	Pyrene		-	2	В
56-55-3	Benzo(A)Anthracene		-1	~1	J
218-01-9	Chrvsene		-	· ~1	J
205-99-2	Benzo(B)Fluoranthene	:	_ [-1	J
207-08-9	Benzo(K)Fluoranthene	:	-	1	J
192-97-2	Benzo(E)Pvrene		-	2	U
50-32-8	Benzo(A)Pyrene		-	× 2	U
198-55-0	Darylana			2	U
193-39-5	Indeno(1,2,3-CD)Pyre	ne	-	ı	J
53-70-3	Dibenz(A,H)Anthracen	e	-	· 1	J
191-24-2	Benzo(G,H,I)Perylene	!	-	ī	J
			- ·		

1X ORGANICS ANALYSIS DATA SHEET

Name: ENSECO

Contract:

28257-01DU GAC-SLP15TD-032393

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28257-01DU

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7523

Level: (low/med) LOW Date Received: 03/24/93

% Moisture: decanted: (Y/N) N Date Extracted: 03/26/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/16/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

(ng/L or ug/Kg) ng/L Q

271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2,3-Dihydroindene		2	В
95-13-6	1H-Indene		0.9	U
91-20-3	Naphthalene		6	BJ
4565-32-6	Benzo(B)Thiophene		0.9	U
91-22-5	Quinoline		1	BJ
120-72-9	1H-Indole		2	U
91-57-6	2-Methylnaphthalen	e	3	В
90-12-0	1-Methylnaphthalen	e	1	BJR
92-52-4	Biphenyl		4	U
208-96-8	Acenaphthylene		1	U
83-32-9	Acenaphthene		1	J
132-64-9	Dibenzofuran		1	U
86-73-7	Fluorene		2	
132-65-0	Dibenzothiophene		1	U
85-01-8	Phenanthrene		6	В
120-12-7	Anthracene		1	U
260-94-6	Acridine		3	U
86-74-8	Carbazole		2	U
206-44-0	Fluoranthene		3	В
129-00-0	Pyrene		3	В
56-55-3	Benzo(A) Anthracene		2	U
218-01-9	Chrysene		3	U
205-99-2	Benzo(B) Fluoranthe	ne	2	U
207-08-9	Benzo(K)Fluoranthe	ne	2	U
192-97-2	Benzo(E)Pvrene		2	U
50-32-8	Benzo(A) Pyrene		2	U
198-55-0	Pervlene	İ	2 2 2	U
193-39-5	Indeno (1, 2, 3-CD) Pv	rene		U
53-70-3	Dibenz(A,H)Anthrace	ene	2	U
101-24-2	Benzo(G,H,I)Perylen	200	. 3	IJ

28257-01FB

GAC-SLP15FB-032393

Name: ENSECO Contract:

(Y/N) N

260-94-6-----Acridine

129-00-0-----Pyrene

218-01-9-----Chrysene

198-55-0-----Perylene

86-74-8-----Carbazole

206-44-0-----Fluoranthene

192-97-2----Benzo(E) Pyrene

50-32-8-----Benzo(A) Pyrene

56-55-3-----Benzo(A)Anthracene

205-99-2----Benzo(B) Fluoranthene

207-08-9-----Benzo(K)Fluoranthene

193-39-5-----Indeno(1,2,3-CD) Pyrene

53-70-3-----Dibenz(A,H)Anthracene

191-24-2----Benzo(G,H,I)Perylene__

GPC Cleanup:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28257-01FB

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7501

Level: (low/med) LOW Date Received: 03/24/93

% Moisture: decanted: (Y/N) N Date Extracted: 03/27/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/15/93

7.0

pH:

Injection Volume: 2.0(uL) Dilution Factor: 0.119

2.50010.1 relame. 2.0 (u2)

CONCENTRATION UNITS:

CAS NO. COMPOUND (ng/L or ug/Kg) ng/L Q

271-89-6----2,3-Dibenzofuran 5 U 496-11-7-----2,3-Dihydroindene_ 1 IJ 95-13-6-----1H-Indene 0.9 IJ 91-20-3-----Naphthalene 4 BJ 4565-32-6----Benzo(B) Thiophene 0.9 U 91-22-5-----Quinoline . 1 U 2 120-72-9-----1H-Indole U 91-57-6----2-Methylnaphthalene 2 BR 2 90-12-0----1-Methylnaphthalene U 92-52-4-----Biphenyl 4 U 208-96-8-----Acenaphthylene U 1 83-32-9-----Acenaphthene 1 U 132-64-9-----Dibenzofuran 1 U 86-73-7-----Fluorene 1 U 1 U 132-65-0-----Dibenzothiophene 3 85-01-8-----Phenanthrene В 1 120-12-7-----Anthracene U

3

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BJ

1X ORGANICS ANALYSIS DATA SHEET

Name: ENSECO Contract:

GAC-SLP4T-032393

28257-02

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28257-02

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7544

Level: (low/med) LOW Date Received: 03/24/93

% Moisture: decanted: (Y/N) N Date Extracted: 03/26/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/17/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

	<u> </u>			_
271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2,3-Dihydroindene		3	В
95-13-6	2,3-Dihydroindene		0.9	
91-20-3	Naphthalene		8	В
4565-32-6	Benzo(B)Thiophene		0.9	U
91-22-5	Quinoline		2	BR
120-72-9	1H-Indole		2	U
91-57-6	2-Methylnaphthalene		4	В
90-12-0	1-Methylnaphthalene		1	BJ
92-52-4	Biphenvl		4	U
208-96-8	Acenaphthylene		1	U
83-32-9	Acenaphthene		1	U
132-64-9	Dibenzofuran		1	U
86-73-7	Fluorene		1	
132-65-0	Dibenzothiophene		1	U
85-01-8	Phenanthrene	ļ	6	В
120-12-7	Anthracene		1	U
260-94-6	Acridine		3	U
86-74-8	Carbazole		2	U
206-44-0	Fluoranthene		2	В
129-00-0	Pyrene	Í	2	В
56-55-3	Benzo(A)Anthracene		2	U
218-01-9	Chrysene		1	J
205-99-2	Benzo(B) Fluoranthene		1	J
207-08-9	Benzo(K)Fluoranthene		2	U
192-97-2	Benzo(E)Pyrene	ľ	` 2	U
50-32-8	Benzo(A)Pvrene		2	U
198-55-0	Pervlene		2	U
193-39-5	Indeno(1.2.3-CD)Pyre	ne	1	Ĵ
53-70-3	Dibenz(A,H)Anthracen	e	2	Ū
	Benzo(Ġ,H,I)Perylene		2	Ĵ

1X ORGANICS ANALYSIS DATA SHEET

Name: ENSECO

Contract:

GAC-SLP15MS-032393

28257-01MS

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28257-01MS

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7542

Level: (low/med) LOW Date Received: 03/24/93

% Moisture: decanted: (Y/N) N Date Extracted: 03/26/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/17/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	(ng/L or	ug/ kg)	119/ L		Q
271-89-6	2,3-Dibenzofuran				5	U
496-11-7	2,3-Dihydroinden				2	В
95-13-6	1H-Indene			1	LO	
91-20-3	Naphthalene			1	12	В
4565-32-6	Benzo(B)Thiophene	3			0.9	U
91-22-5	Quinoline			1	16	В
120-72-9	1H-Indole				2	U
91-57-6	2-Methylnaphthale	ene		1	11	В
90-12-0	1-Methylnaphthale	ene			1	BJR
92-52-4	Biphenvl				4	ับ
208-96-8	Acenaphthylene				1	U
83-32-9	Acenaphthene				2	[
132-64-9	Dibenzofuran		- -		1	U
86-73-7	Fluorene			1	.0	
132-65-0	Dibenzothiophene		<u> </u>		1	ט
85-01-8	Phenanthrene				5	В
120-12-7	Anthracene				1	U
260-94-6	Acridine				3	U
86-74-8	Carbazole				2	Ŭ
206-44-0	Fluoranthene				2	В
129-00-0	Pyrene		<u> </u>		3	В
56-55-3	Benzo(A) Anthracen	ie			1	J
218-01-9	Chrysene				6	
205-99-2	Benzo(B) Fluoranth	ene			1	JR
207-08-9	Benzo(K)Fluoranth	ene			1	JR
192-97-2	Benzo(E)Pyrene		l l		1	J
50-32-8	Benzo(A) Pyrene		<u> </u>		2	U
198-55-0	Pervlene				2	U
193-39-5	Indeno(1,2,3-CD)P	yrene			1	JR
53-70-3	Dibenz(A,H)Anthra	cene	 -		2	Ŭ
191-24-2	Benzo(Ġ,Ĥ,Í)Peryl	ene	— I		1	J

Name: ENSECO Contract:

28257-01MSD

GAC-SLP15MSD-032393
Lab Code: ENSECO Case No.: SDG No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28257-01MSD

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7543

Level: (low/med) LOW Date Received: 03/24/93

% Moisture: decanted: (Y/N) N Date Extracted: 03/26/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/17/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND (IIg/ II OI ug/ Ng/		×
271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2,3-Dihydroindene_		2	В
95-13-6	1H-Indene		10	-
91-20-3	Naphthalene		12	В
4565-32-6	Benzo(B)Thiophene_		0.9	Ū
91-22-5	Quinoline		17	В
120-72-9	1H-Indole		2	ΙŪ
91-57-6	2-Methylnaphthalene		11	В
90-12-0	1-Methylnaphthalene		1	BJR
92-52-4	Biphenvl		4	U
208-96-8	Acenaphthylene		1	ប
83-32-9	Acenaphthene_		2	
132-64-9	Dibenzofuran		1	U
86-73-7	Fluorene		11	
132-65-0	Dibenzothiophene		1	Ū
85-01-8	Phenanthrene	 	5	В
120-12-7	Anthracene		6	[
260-94-6	Acridine		3	U
86-74-8	Carbazole		2	ប
206-44-0	Fluoranthene		2	В
129-00-0	Pvrene		2	В
56-55-3	Benzo(A)Anthracene		2	U
218-01-9	Chrysene		6	
205-99-2	Benzo(B) Fluoranthen	e	2	U
207-08-9	Benzo(K)Fluoranthen	e	2	Ū
192-97-2	Benzo(E)Pvrene		1	J
50-32-8	Benzo(A)Pyrene		1 2	U
198-55-0	Pervlene		2	U
193-39-5	Indeno(1,2,3-CD) Pyro	ene	2	U
53-70-3	Dibenz(A,H)Anthrace	ne	2	U
191-24-2	Benzo(G,H,I)Perylen		1	JR

BLK01

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BL032693

Sample wt/vol: 4000 (q/mL) ML Lab File ID: C7520

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 03/26/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/16/93

Injection Volume: 2.0(uL) Dilution Factor: 0.125

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ng/L or ug/Kg) ng/L Q

271-89-6----2,3-Dibenzofuran 5 U 496-11-7----2,3-Dihydroindene 1 J 95-13-6-----1H-Indene 0.9 U 5 91-20-3-----Naphthalene J 4565-32-6----Benzo(B) Thiophene_ 0.9 U 91-22-5----Ouinoline 1 J 120-72-9-----IH-Indole 2 IJ 91-57-6----2-Methylnaphthalene 4 90-12-0----1-Methylnaphthalene 1 J 92-52-4----Biphenyl 4 IJ 208-96-8-----Acenaphthylene 1 U 83-32-9----Acenaphthene 1 U 132-64-9-----Dibenzofuran 1 U 86-73-7-----Fluorene 1 U U 132-65-0-----Dibenzothiophene 1 85-01-8-----Phenanthrene 4 U 120-12-7-----Anthracene 1 3 260-94-6-----Acridine IJ 2 86-74-8------Carbazole IJ 206-44-0----Fluoranthene 2 129-00-0-----Pyrene 2 2 56-55-3----Benzo(A) Anthracene U 3 218-01-9-----Chrysene U 2 U 205-99-2----Benzo(B)Fluoranthene 2 2 2 2 2 U 207-08-9----Benzo(K)Fluoranthene_ U 192-97-2----Benzo(E) Pyrene 50-32-8-----Benzo(A) Pyrene_ U 198-55-0----Perylene U 193-39-5----Indeno(1,2,3-CD) Pyrene U 53-70-3-----Dibenz(A,H)Anthracene___ 2 U 191-24-2----Benzo(G,H,I)Perylene__ IJ

BLK02

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BL032793

Sample wt/vol: 4000 (g/mL) ML Lab File ID: C7519

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 03/27/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 04/16/93

Injection Volume: 2.0(uL) Dilution Factor: 0.125

GPC Cleanup: (Y/N) N pH: 7.0

	·			
271-89-6	2,3-Dibenzofuran		 5	U
496-11-7	2,3-Dihydroindene		1	U
95-13-6	1H-Indene		0.9	Ū
91-20-3	Naphthalene		2	J
4565-32-6	Benzo(B)Thiophene		0.9	U
91-22-5	Quinoline		1	U
120-72-9	1H-Indole		2	U
91-57-6	2-Methylnaphthalene		1	
90-12-0	1-Methylnaphthalene		2	U
92-52-4	Biphenyl		4	ับ
208-96-8	Acenaphthylene		1	ַ
83-32-9	Acenaphthene		1	ַ
132-64-9	Dibenzofuran		1	U
86-73-7	Fluorene		1	ט
132-65-0	Dibenzothiophene		1	U
85-01-8	Phenanthrene		3	1
120-12-7	Anthracene		1	U
260-94-6	Acridine		3	U
86-74-8	Carbazole		2	U
206-44-0	Fluoranthene		1	J
129-00-0	Pyrene		1	שׁ
56-55-3	Benzo(A)Anthracene		2	U
218-01-9	Chrysene		3	U
205-99-2	Benzo(B)Fluoranthene		2	ับ
207-08-9	Benzo(K)Fluoranthene		2	บ
192-97-2	Benzo(E)Pvrene		2	ט
50-32-8	Benzo(A)Pyrene		2	บ
198-55-0	Perylene		2	บ
193-39-5	Indeno(1,2,3-CD)Pyre	ne	2	Ŭ
53-70-3	Dibenz(A,H)Anthracen	e	2	U
	Benzo(G,H,I)Perylene	 _	3	

2C WATER SEMIVOLATILE SURROGATE RECOVERY

Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.:

SDG No.:

	EPA	S1	S2	S3	TOT
	SAMPLE NO.	(NAP)#	(FLU)#	(CHR)#	OUT
	=========	=====	=====	=====	===
01	28257-01	96	67	62	0
02	28257-01DU	100	80	58	0
03	28257-01FB	84	76	91	0
04	28257-02	90	85	83	0
05	28257-01MS	96	84	136 *	1
06	28257-01MSD	97	85	131 *	1
07	BLK02	67	58	62	0
80	BLK01	83	70	96	0
					_

				QC LIMITS
S1	(NAP)	=	Naphthalene-d8	(14-108)
S2	(FLU)	=	Fluorene-d10	(41-162)
S3	(CHR)	=	Chrysene-d12	(10-118)

[#] Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

3C WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 28257-01

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC #	QC LIMITS REC.
1H-Indene	9.520	0	10.21	107	20-150
	9.520	3.023	12.02	95	20-150
	9.520	0	15.59	164 *	20-150
2-Methylnaphthalene	9.520	2.071	10.76	91	20-150
	9.520	1.630	10.09	89	20-150
	9.520	1.214	5.748	48	20-150
	9.520	0	1.273	13	10-150

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC #	% RPD #	QC L RPD	IMITS
	=======	=======================================	=====	======	=====	=====
1H-Indene	9.520	10.44	110	3	28	20-150
Naphthalene'	9.520	12.02	95	0	28	20-150
uinoline	9.520	16.54	174 *	6	28	20-150
-Methylnaphthalene	9.520	11.40	98	7	28	20-150
r'luorene	9.520	10.54	94	5	28	20-150
Chrysene	9.520	5.950	50	4	28	20-150
Benzo(E) Pyrene	9.520	1.464	15	14	28	10-150
					'	

 $[\]sharp$ Column to be used to flag recovery and RPD values with an asterisk \star Values outside of QC limits

COMMENTS:

4B SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLK02

Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 28257 SAS No.:

SDG No.:

Lab File ID: C7519

Lab Sample ID: BL032793

Instrument ID:

4500-C

Date Extracted: 03/27/93

Matrix: (soil/water) WATER

Date Analyzed: 04/16/93

Level: (low/med)

Time Analyzed: 1136

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	28257-01FB	28257-01FB	C7501	04/15/93

COMMENTS:

4B SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLK01

△ Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.:

SDG No.:

Lab File ID: C7520

Lab Sample ID: BL032693

Instrument ID:

4500-C

Date Extracted: 03/26/93

Matrix: (soil/water) WATER

Date Analyzed: 04/16/93

Level: (low/med)

Time Analyzed: 1223

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	==========		=======================================	========
01	28257-01	28257-01	C7521	04/16/93
02	28257-01DU	28257-01DU	C7523	04/16/93
03	28257-02	28257-02	C7544	04/17/93
04	28257-01MS	28257-01MS	C7542	04/17/93
05	28257-01MSD	28257-01MSD	C7543	04/17/93

COMMENTS:

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.:

SDG No.:

Lab File ID: C7500T

Run Date: 04/15/92

Instrument ID: 4500-C

Run Time: 1051

		LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
 SSTD040 28257-01FB		C7500 C7501	04/15/93 04/15/93	1051	

5B SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Lab File ID: C7516T Run Date: 04/16/92

Instrument ID: 4500-C Run Time: 0910

	EPA LAB SAMPLE NO. SAMPLE ID		LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	=======================================		=======================================	========	=======
01	SSTD040	40 PPB PAH	C7516	04/16/93	0910
02	BLK02	BL032793	C7519	04/16/93	1136
03	BLK01	BL032693	C7520	04/16/93	1223
04	28257-01	28257-01	C7521	04/16/93	1310
05	28257-01DU	28257-01DU	C7523	04/16/93	1443

5B SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Lab File ID: C7533T Run Date: 04/17/92

Instrument ID: 4500-C Run Time: 1104

	EPA LAB		LAB	DATE	TIME	
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED	
	=========		=======================================		1104	
01	SSTD040	40_PPB_PAH	C7533	04/17/93	1104	
02	28257-01MS	28257-01MS	C7542	04/17/93	1859	
03	28257-01MSD	28257-01MSD	C7543	04/17/93	1945	
04	28257-02	28257-02	C7544	04/17/93	2032	

5B SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.:

SDG No.:

Lab File ID: C7495T

Run Date: 04/14/93

Instrument ID: 4500-C

Run Time: 1526

	EPA LAB SAMPLE NO. SAMPLE ID		LAB FILE ID	DATE ANALYZED	TIME	
	SAMPLE NO.	2=====================================	FIDE 10	#========	=========	
01	SSTD040	40 PPB PAH	C7495	04/14/93	1526	
02	SSTD020	20_PPB_PAH	C7496	04/14/93	1612	
03	SSTD240	240_PPB_PAH	C7497	04/14/93	1659	
04	SSTD600	600_PPB_PAH	C7498	04/14/93	1745	
05	SSTD1200	1200_PPB_PAH	C7499	04/14/93	1920	

6B SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: STAND SAS No.: SDG No.:

Instrument ID: 4500-C Calibration Date(s): 04/14/93 04/14/93

Calibration Times: 1526 1920

	= C7496 RRF40 = C7495 0= C7498 RF1200= C7499						
COMPOUND	RRF20	RRF40			RF1200	RRF	RSD
2.3-Dibenzofuran	1.325	1.198	1.645	1.671	1.510	1.470	13.9
2,3-Dihydroindene	1.134		1.383				
1H-Indene Naphthalene Benzo(B)Thiophene	1.414		1.721				
Naphthalene	2.298		2.705				16.8
Benzo(B) Thiophene	1.750	1.649	2.126	2.084	1.542	1.830	14.3
Quinoline	1.095	1.195	1.335	1.316	1.417	1.272	10.0
1H-Indole	1.223	1.327	1.494	1.495			8.4
Quinoline 1H-Indole 2-Methylnaphthalene	1.180		1.377	1.370	1.233	1.255	9.3
1-Methylnaphthalene	1.538	1.485	1.862	1.822	1.446	1.631	12.0
Biphenyl	1.817	1.759	2.157	2.082	1.438	1.851	15.4
Biphenyl Acenaphthylene	1.892		2.236	2.160	1.485	1.939	15.2
Acenaphthene	1.132	1.146	1.346		1.105	1.214	9.8
Acenaphthene Dibenzofuran	1.855		2.145				8.4
uorene	1.080		1.291	1.276	1.371	1.229	9.9
benzothiophene	0.987		1.183	1.143	0.957		10.5
-nenanthrene	1.079		1.147		1.004		7.0
Anthracene	0.921	0.920	1.081	1.052	0.951		7.7
Acridine	0.646		0.742				8.8
	0.877		1.055			1.016	11.0
Carbazole Fluoranthene	0.883	0.948	1.001				4.9
			1.025				5.6
Pyrene Benzo(A)Anthracene	1.432	1.492	1.692	1.724	1.398	1.548	9.7
Chrysene	1.479	1.504	1.716		1.375	1.559	9.8
Benzo(B) Fluoranthene	1.505	1.279	1.726		1.447	1.552	13.8
Panca (V) Eluamanthana	1 2 5 7 4 1	1.132	1.586		1.394	1.466	14.2
Benzo(K) Fluoranthene Benzo(E) Pyrene Benzo(A) Pyrene Pervlene	1.614	1.295	1.856		1.561	1.649	15.2
Benzo (A) Dyrene	0.881	1.055	0.853			0.973	12.2
Perylene	1.246	0.935	1.421				17.0
Indeno(1,2,3-CD)Pyrene	1.507		1.631		1.499	1.529	10.9
Dibong (A. H.) Anthroper	1.50/			1.437	1.253	1.323	9.0
Dibenz(A,H)Anthracene Benzo(G,H,I)Perylene	1.409	0 989	1 469	1.532			15.9
benzo(G, n, 1) rerytene	1.310	J. J. J. J. J. J. J. J. J. J. J. J. J.	eogo =======		1.520		
Naphthalene-d8		1.853	2.426		1.659	2.058	15.6
	1.126	1.163	1.380	1.383	1.300	1.270	9.5
Fluorene-d10 Chrysene-d12	1.094	1.105	1.324	1.339	1.199	1.212	9.6
chi y sene-u12	1.034	1.105	1.724	1.337	1.177	1.212	7.0
						1	

7B SEMIVOLATILE CONTINUING CALIBRATION CHECK

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Instrument ID: 4500-C Calibration date: 04/15/93 Time: 1051

Lab File ID: C7500 Init. Calib. Date(s): 04/14/93 04/14/93

Init. Calib. Times: 1526 1920

COMPOUND	RRF	RRF40	MIN RRF	%D	MAX %D
2,3-Dibenzofuran	1.470			_	35.0
2,3-Dihydroindene	1.243				35.0
1H-Indene	1.515				35.0
					35.0
Benzo (B) Thiophene	1.830				35.0
Quinoline	1.272				35.0
1H-Indole	1 388				35.0
2-Methylnaphthalene	1.255				35.0
1-Methylnaphthalene	1.631				35.0
	1.851				35.0
Acenaphthylene	1.939			-0.9	
Acenaphthene	1.214	1	ļ	-3.1	
Dibenzofuran	1.931	2.038		-5.5	
Fluorene	1.229			-11.3	
Dibenzothiophene	1.044	0.996	ļ		35.0
Phenanthrene	1.066	1.019			35.0
Anthracene	0.985	0.897	}	8.9	35.0
Acridine	0.731	0.615		15.9	35.0
	1.016			33.2	35.0
CarbazoleFluoranthene	0.937	0.853		9.0	35.0
	0.997	0.907		9.0	35.0
Pyrene Benzo(A)Anthracene	1.548	1.157	ĺ	25.3	
unrysene i	1.559	1.257)	19.4	35.0
Benzo(B) Fluoranthene	1.552	1.365	Ţ	12.0	35.0
Benzo(K)Fluoranthene	1.466	1.361	- 1	7.2	35.0
Benzo(E) Pyrene	1.649	1.598	1	3.1	35.0
Benzo(A) Pyrene	0.973	1.189		-22.2	35.0
Dawiilana	1.275	1.095	ł	14.1	35.0
Indeno(1,2,3-CD)Pyrene Dibenz(A,H)Anthracene	1.529	1.349	ļ	11.8	
Dibenz(A,H)Anthracene	1.323	1.132		14.4	35.0
Benzo(Ġ,Ĥ,ĺ)Perylene	1.324			6.6	35.0
Naphthalene-d8	2.058				35.0
Fluorene-d10	1.270	1.308	}	-3.0	35.0
Chrysene-d12	1.212	1.057			35.0

7B SEMIVOLATILE CONTINUING CALIBRATION CHECK

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Instrument ID: 4500-C Calibration date: 04/16/93 Time: 0910

Lab File ID: C7516 Init. Calib. Date(s): 04/14/93 04/14/93

Init. Calib. Times: 1526 1920

MIN MAX RRF RRF %D %D RRF40 COMPOUND | 2,3-Dibenzofuran | 1.470 | 1.070 | 2,3-Dihydroindene | 1.243 | 0.935 | 1H-Indene | 1.515 | 1.055 | Naphthalene | 2.286 | 1.974 | Benzo(B)Thiophene | 1.830 | 1.518 | Quinoline | 1.272 | 1.128 | 1H-Indole | 1.388 | 1.205 | 2-Methylnaphthalene | 1.255 | 1.026 | 1-Methylnaphthalene | 1.631 | 1.422 | Biphenyl | 1.851 | 1.516 | Acenaphthylene | 1.939 | 1.740 | Acenaphthene | 1.214 | 1.006 | Dibenzofuran | 1.931 | 1.890 | Fluorene | 1.229 | 1.129 | Dibenzothiophene | 1.044 | 1.049 | Phenanthrene | 1.066 | 1.054 | Acridine | 0.731 | 0.733 | 0.733 | _____| 27.2 35.0 24.8 35.0 30.4 35.0 13.6 35.0 17.0 35.0 11.3 35.0 13.2 35.0 18.2 35.0 18.2 | 35.0 | 12.8 | 35.0 | 18.1 | 35.0 | 17.1 | 35.0 | 2.1 | 35.0 | -0.5 | 35.0 | 1.1 | 35.0 | 4.0 | 35.0 | -0.3 | 35.0 | 20.2 | 35.0 | 20.2 | 35.0 | 0.731 0.733 Acridine____ 0.731 0.733 1.016 0.811 0.937 1.018 0.997 1.176 1.548 1.373 1.559 1.418 1.552 1.426 1.466 1.318 1.649 1.607 0.973 1.209 1.275 1.141 1.529 1.392 1.323 1.135 1.324 1.230 20.2 35.0 Carbazole -8.6 35.0 Fluoranthene -18.0 | 35.0Pyrene Benzo(A) Anthracene 11.3 | 35.0 Chrysene 9.0 35.0 Benzo(B) Fluoranthene 8.1 | 35.0 Benzo(K) Fluoranthene 10.1 35.0 2.5 35.0 Benzo(E) Pyrene_____ Benzo(A) Pyrene -24.2 | 35.0 10.5 35.0 Pervlene Indeno(1,2,3-CD)Pyrene______Dibenz(A,H)Anthracene_____ 9.0 35.0 14.2 35.0 7.1 35.0 Benzo(Ġ,H,Í)Perylene 1.324 1.230 _____ 17.9 | 35.0 5.4 | 35.0 Naphthalene-d8____ 2.058 1.690 Fluorene-d10_____ 1.270 1.202 4.7 35.0 Chrysene-d12 1.212 1.155

7B SEMIVOLATILE CONTINUING CALIBRATION CHECK

Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.:

SDG No.:

Instrument ID: 4500-C Calibration date: 04/17/93 Time: 1104

Lab File ID: C7533

Init. Calib. Date(s): 04/14/93 04/14/93

Init. Calib. Times: 1526 1920

COMPOUND	RRF	RRF40	MIN RRF	%D	MAX %D
255252325252525252525252	=====	=====		======	====
2,3-Dibenzofuran 2,3-Dihydroindene	1.470			16.7	
2,3-Dihydroindene	1.243			16.6	
In-Indene	1.515			16.2	
Naphthalene	2.286			11.7	
Benzo(B) Thiophene	1.830			21.1	
Quinoline	1.272	1.022		19.6	
1H-Indole	1.388	1.032		25.6	
2-Methylnaphthalene	1.255			19.8	
1-metnyinaphthaiene	1.031			15.0	
Biphenyl	1.851			10.5	
Acenaphthylene	1.939			11.9	
Acenaphthene	1.214			14.2	
Dibenzoluran	1.931	1.790		7.3	
	1.229	1.179		4.1	
Dibenzothiophene	1.044	0.828	i	20.7	
Phenanthrene	1.066			21.1	
Anthracene	0.985			26.1	
Acridine	0.731	0.607		17.0	
Carbazole	1.016	0.720	ļ	29.1	
Fluoranthene	0.937	0.850			35.0
Pyrene	0.997	0.949	ł		35.0
Benzo(A) Anthracene	1.548	1.234	J	20.3	
Chrysene	1.559	1.298		16.7	35.0
Benzo(B) Fluoranthene	1.552	1.444	ł		35.0
Benzo(K)Fluoranthene	1.466	1.272		13.2	
Benzo(E) Pyrene	1.649	1.510			35.0
Delizural Pyrelie	0.973	1.112	}	-14.3	35.0
Perylene Indeno(1,2,3-CD) Pyrene Dibenz(A H) Anthracene	1.275	1.082		15.1	
Indeno(1,2,3-CD) Pyrene	1.529	1.364	[10.8	
Dibenz (h, h) hinting dene	1.323	1.142	ł	13.7	
Benzo(Ġ,Ĥ,ĺ)Perylene	1.324	1.269		4.2	35.0
Naphthalene-d8	2.058	1.809		12.1	35.0
Fluorene-d10	1.270	1.150	1	9.4	35.0
Chrysene-d12	1.212	1.165	1		35.0

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Lab File ID (Standard): C7500 Date Analyzed: 04/15/93

Instrument ID: 4500-C Time Analyzed: 1051

		IS1(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	======================================	========	======	========	======	=========	======
	12 HOUR STD	346624	14.82	624205	18.60	380316	28.49
	UPPER LIMIT	693248	15.32	1248410	19.10	760632	28.99
	LOWER LIMIT	173312	14.32	312102	18.10	190158	27.99
	=======================================	========	=======	========	======	========	======
	EPA SAMPLE NO.						
	=========	========	======	========	======	========	======
01	28257-01FB	435987	15.02	857908	18.80	*	0.00 *
j					l		

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A) Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

* Values outside of QC limits.

[#] Column used to flag internal standard area values with an asterisk.

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Lab File ID (Standard): C7516 Date Analyzed: 04/16/93

Instrument ID: 4500-C Time Analyzed: 0910

		IS1(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	225222222222	=======	======		======	========	======
	12 HOUR STD	263650	14.82	446887	18.62	275305	28.67
]	UPPER LIMIT	527300	15.32	893774	19.12	550610	29.17
	LOWER LIMIT	131825	14.32	223444	18.12	137652	28.17
l	=======================================	========	======	========	======	========	======
	EPA SAMPLE NO.						
. !	=========	========	======	========	======	=========	======
01	28257-01	466132	14.84	639317	18.62	316516	28.72
02	28257-01DU	385209	14.82	508088	18.62	229412	28.72
03	BLK02	467960	14.82	599857	18.62	*	0.00 *
04	BLK01	515022	14.82	613930	18.62	312583	28.59
				 _			

IS1 (ACN) = Acenaphthene-D10 IS2 (PHN) = Phenanthrene-D10

IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area.

RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.

* Values outside of QC limits.

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28257 SAS No.: SDG No.:

Lab File ID (Standard): C7533 Date Analyzed: 04/17/93

Instrument ID: 4500-C Time Analyzed: 1104

		IS1(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	12 HOUR STD	292247	14.82	489265	18.62	284530	28.71
	UPPER LIMIT	584494	15.32	978530	19.12	569060	29.21
	LOWER LIMIT	146124	14.32	244632	18.12	142265	28.21
	EPA SAMPLE NO.	=======		, ====================================			
01	28257-02	239536	14.80	341347	18.67	191022	28.77
02	28257-01MS	311205	14.82	446073	18.69	177368	28.79
03	28257-01MSD	409474	14.85	584173	18.70	223740	28.79

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A) Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area.

AREA LOWER LIMIT = - 50% of internal standard area.

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk.

* Values outside of QC limits.





CASE NARRATIVE

FOR

City of St. Louis Park

May 13, 1993

Enseco - RMAL Project Number 028981

Introduction

Seven aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on April 28, 1993. The samples were logged in under RMAL project number 028257. Sample GAC-SLP15TFBD-042793 was extracted and held per the April 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April, 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

28981-0002MS/SD matrix spike percent recovery for fluorene was reported outside of QC limits due to an interference present in the sample. Quantitation was checked and no further action was taken.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the calibration curve used was, 20 ng/ml, 40 ng/ml, 240 ng/ml, 600 ng/ml, and 1200 ng/ml.



Case Narrative - RMAL #028981 May 17, 1993 Page Two

All samples associated with project 028981 show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the letter (R) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by

Julieann V. Kramer Program Manager

Approved by: Randy Greaves

Program Manager

Date: // // ///

Date: 5-12-93



SAMPLE DESCRIPTION INFORMATION for City of St. Louis Park

			Sampl	ed	Received
Lab ID	Client ID	Matrix	Date	Time	Date
028981-0001-SA 028981-0002-SA 028981-0002-DU 028981-0002-MS 028981-0002-SD 028981-0002-FB 028981-0002-FD	GAC-SLP4T-042793 GAC-SLP15T-042793 GAC-SLP15TD-042793 GAC-SLP15TMS-042793 GAC-SLP15TMSD-042793 GAC-SLP15TFB-042793 GAC-SLP15TFBD-042793	AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS	27 APR 93 27 APR 93 27 APR 93 27 APR 93 27 APR 93 27 APR 93 27 APR 93		28 APR 93 28 APR 93 28 APR 93 28 APR 93 28 APR 93 28 APR 93 28 APR 93



TABLE OF CONTENTS FOR CITY OF ST. LOUIS PARK RMAL PROJECT# 028981

PPT-PAH

QC Summary	0001
Sample Data	0010
Standards Data	0211
Raw OC Data	0558



Qualifier Codes and Their Usage

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as discussed for the U flag.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater then 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- C = This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do <u>not</u> apply this flag, instead use a laboratory-defined flag, discussed below.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.

- E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. If one or more compounds have a response greater than full scale, except as noted in Exhibit D, the sample or extract must be diluted and re-analyzed accordingly to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number. NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of each peak should be considered separately, e.g., a diluted analysis is not required for total xylenes unless the concentration of either peak separately exceeds 200 ug/L.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.
- A = This flag indicates that a TIC is a suspected aldol-condensation product.
- X = Other specific flags may be required to properly define the results. If used, they must be fully described, and such description attached to the Sample Data Summary Package and the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".
- R = This flag is used for polyaromatic hydrocarbons which show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion.



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Drive

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CHAIN OF CUSTODY SAMPLE SAFETM CONDITIONS ENSECO CLIENT PACKED BY SEAL NUMBER LOUIS PARK (WATER DEPT CONDITION OF CONTENTS SEALED FOR SHIPPING BY SAMPLING COMPANY INITIAL CONTENTS TEMP. °C 77 2 2/ SEAL NUMBER SAMPLING STATUS Done Done Continuing Until TEAM LEADER SEAL INTACT UPON RECEIPT BY LAB. CONTENTS TEMPERATURE UPON RECEIPT BY LAH ☐ Yes °C DATE SAMPLE ID/DESCRIPTION SAMPLE TYPE # CONTAINERS **ANALYSIS PARAMETERS** TIME REMARKS 4-27-93 GAC-56 PISTO-042793 4-27-93 **CUSTODY TRANSFERS PRIOR TO SHIPPING** SHIPPING DETAILS DELIVERED TO SHIPPER BY **RELINQUISHED BY (SIGNED) RECEIVED BY (SIGNED)** DATE TIME 328 AIRBILL NUMBER 2103420664 DATE/TIME CO



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ANALYTICAL TEST REQUESTS for City of St. Louis Park

Lab ID: 028981	Group Code	Analysis Description	Custom Test?
0001 - 0002, 0002	A	Polynuclear Aromatic Hydrocarbons, SIM Low Level Prep - PAH/SIM by GC/MS Low Level	N N
0002	В	Prep - PAH/SIM by GC/MS Low Level	N

SUMMARY

DATA

PACKAGE

FOR

CMY OF SAINT LOUIS PARK RMAL NO: 28981

Name: ENSECO Contract:

28981-01

GAC-SLP4T-042793

Lab Code: ENSECO Case No.: 28981 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28981-01

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7625

Level: (low/med) LOW Date Received: 04/27/93

% Moisture: decanted: (Y/N) N Date Extracted: 04/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/04/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND ((ng/L or ug/	1197			
271-99-6	2,3-Dibenzofuran_				5	U
406-11-7	2,3-Dibenzolulun				2	
05-12-6	2,3-Dihydroindene_ 1H-Indene				0.9	U
				•	4	BJ
4565-33-6	Naphthalene Benzo(B)Thiophene				0.9	เบ
01-22-5	Quinoline				1	U
120-72-0	1H-Indole				2	Ū
120-/2-9	2-Methylnaphthalene				2] _
91-9/-0	ene feddaer fyddol 2				2	lu
	1-Methylnaphthalene Biphenyl				4	ľŭ
92-52-4	Biphenyl Acenaphthylene				1	Ü
208-96-8	Acenaphthylene				ī	បី
83-32-9	Acenaphthene		,		1	บั
	Dibenzofuran				i	បី
86-73-7	Fluorene				i	ŭ
132-65-0	Dibenzothiophene				4	В
85-01-8	Phenanthrene				-	Ü
	Anthracene				1	_
	Acridine				3 2 2	Ü
	Carbazole				2	ַ
	Fluoranthene				2	B
129-00-0	Pyrene				2	В
56-55-3	Benzo (A) Anthracene		l		2	U
218-01-9	Chrysene				3	U
205-99-2	Benzo(B) Fluoranther	ne			2	ប
207-08-9	Benzo (K) Fluoranther	ne			2	U
192-97-2	Benzo (E) Pyrene				2 3 2 2 2 2 2 2 2	U
50-32-8	Benzo(A) Pyrene				2	U
198-55-0	Perylene				2	U
103-39-5	Indeno (1, 2, 3-CD) Pyr	cene			2	[ซ
53-70-3	Dibenz (A, H) Anthrace	ene			2	U
101-24-2	Benzo(G,H,I)Peryler	10			3	ប

28981-02

) Name: ENSECO

Contract:

GAC-SLP15T-042793

Lab Code: ENSECO Case No.: 28981 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28981-02

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7626

Level: (low/med) LOW Date Received: 04/27/93

% Moisture: decanted: (Y/N) N Date Extracted: 04/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/04/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

	(1	19/11 01			*
271-89-6	2,3-Dibenzofuran			5	บ
496-11-7	2,3-Dihydroindene		<u> </u>	19	1
95-13-6	2,3-Dihydroindene			0.9	ט
91-20-3	Naphthalene			3	BJ
4565-32-6	Benzo (B) Thiophene			5	
91-22-5	Ouinoline			1	U
120-72-9	1H-Indole			1 2 2 2 12	שׁ
91-57-6	2-Methylnaphthalene		 1	2	1
90-12-0	1-Methylnaphthalene			2	R
92-52-4	Biphenyl		-	12	
208-96-8	Acenaphthylene			7	R
83-32-9	Acenaphthene			45]
132-64-9	Dibenzofuran			10	
86-73-7	Fluorene			40	
132-65-0	Dibenzothiophene			6	
85-01-8	Phenanthrene			4	В
120-12-7	Anthracene			1	טו
260-94-6	Acridine			1	JR
86-74-8	Carbazole		- -1	2	{
206-44-0	Fluoranthene		1	12	В
129-00-0	Pvrene			10	В
56-55-3	Benzo(A) Anthracene			2	ี่ซี
218-01-9	Chrysene			3	Ū
205-99-2	Chrysene Benzo(B)Fluoranthene	 -	— <u> </u>	2	U
207-08-9	Benzo(K)Fluoranthene			2	U
192-97-2	Benzo(E)Pvrene			2 2 2	Ū
50-32-8 -	Benzo(A)Pyrene			2	Ū
198-55-0	Pervlene			2	Ū
193-39-5	Indeno(1,2,3-CD) Pyre	ne		2 2	Ū
53-70-3	Dibenz (A, H) Anthracen	е	 -	2	Ū
191-24-2	Benzo(G,H,I)Perylene			3	บั

SAMPLE NO.

Lab Name: ENSECO Contract: 28981-02DU

GAC-SLP15TD-042793
Lab Code: ENSECO Case No.: SDG No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28981-02DU

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7627

Level: (low/med) LOW Date Received: 04/27/93

% Moisture: decanted: (Y/N) N Date Extracted: 04/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/04/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	(ng/L c	or ug/	rd)	119/11	· Q
271-89-6	2,3-Dibenzofura	n			5	U
496-11-7	2,3-Dihydroinde	ne			24	
95-13-6	1H-Indene				0.9	שופ
91-20-3	Naphthalene				2	BJ
4565-32-6	Benzo(B)Thiophe	ne			6	R
91-22-5	Ouinoline				6 1 2 1 2	Ü
120-72-9	1H-Indole				2	U
91-57-6	2-Methylnaphtha	lene			1	}
90-12-0	1-Methylnaphtha	lene			2	
92-52-4	Biphenyl				14	1
208-96-8	Acenaphthylene				9	
83-32-9	Acenaphthene				53	1
132-64-9	Dibenzofuran				11	
86-73-7	Fluorene				48	
132-65-0	Dibenzothiophene	3			8	
85-01-8	Phenanthrene				4	В
120-12-7	Anthracene				1	J
	Acridine				3	ប
86-74-8	Carbazole				3	
206-44-0	Fluoranthene				13	В
129-00-0	Pyrene				12	В
56-55-3	Benzo(A) Anthrace	ene			2	שׁ
218-01-9	Chrysene				3	U
205-99-2	Benzo(B) Fluorant	hene			3 2	Ū
207-08-9- -	Benzo(K) Fluorant	hene			2	U
192-97-2	Benzo(E)Pyrene				2	Ü
50-32-8	Benzo(A) Pyrene				2 2	Ū
198-55-0	Pervlene				2	Ū
193-39-5	Perylene Indeno(1,2,3-CD)	Pyrene			2 2 2	Ū
53-70-3	Dibenz(A,H)Anthr	acene			$\bar{2}$	Ŭ
101-14-1	Benzo(G,H,I)Pery	-1			3	Ŭ

Name: ENSECO Contract:

28981-02FB

GAC-SLP15TFB-042793

Lab Code: ENSECO Case No.: 28981 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28981-02FB

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7636

Level: (low/med) LOW Date Received: 04/27/93

% Moisture: decanted: (Y/N) N Date Extracted: 04/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/05/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	(ng/L or	ug/kg)	ng/L		Q
271-89-6	2,3-Dibenzofuran_				5	U
496-11-7	2.3-Dihydroindene		-		1	ĴĴ
95-13-6	1H-Indene		— I		0.9	
91-20-3	Naphthalene				3	BJ
4565-32-6	Benzo(B)Thiophene		— ₁		0.9	
91-22-5	Ouinoline				1	ט
120-72-9	1H-Indole				2	Ū
91-57-6	2-Methylnaphthalen	e			2 2 2	l
90-12-0	1-Methylnaphthalen	e	 1		2	บ
92-52-4	Biphenyl				4	U
208-96-8	Acenaphthylene				1	U
83-32-9	Acenaphthene				1	U
132-64-9	Dibenzofuran				1	U
B6-73-7 	Fluorene	-			1	U
132-65-0	Dibenzothiophene				1	บ
85-01-8	Phenanthrene				1	BJ
120-12-7	Anthracene				1	U
260-94-6	Acridine				3	U
86-74-8	Carbazole		I		2	บ
206-44-0	Fluoranthene				1	ַ
129-00-0- -	Pvrene				1	U
56-55-3	Benzo(A) Anthracene		— <u> </u>		2	U
218-01-9	Chrvsene		—		3	U
205-99-2	Benzo(B) Fluoranther	ne			232222222	U
207-08-9	Benzo(K)Fluoranther	ne			2	U
L92-97-2	Benzo(E)Pvrene				2	U
50-32-8	Benzo(A) Pyrene				2	U
L98-55-0	Pervlene				2	U
L93-39-5 	Indeno (1, 2, 3-CD) Pvi	rene			2	U
53-70-3	Dibenz(A,H)Anthrace	ene	—		2	U
191-24-2	Benzo(G,H,I)Peryler	ne	— j		3	II

Name: ENSECO Contract: 28981-02MS
GAC-SLP15TMS-042793

Lab Code: ENSECO Case No.: 28981 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28981-02MS

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7628

Level: (low/med) LOW Date Received: 04/27/93

% Moisture: decanted: (Y/N) N Date Extracted: 04/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/04/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

271-89-6	2,3-Dibenzofuran	5	ט
496-11-7	2,3-Dihydroindene	15	Ì
95-13-6- -	IH-Indene	9	
91-20-3	Naphthalene	9	В
4565-32-6 -	Benzo(B)Thiophene	4	R
91-22-5	Quinoline	8	
120-72-9	1H-Indole	2	ע
91-57-6	2-Methylnaphthalene	8	
90-12-0	1-Methylnaphthalene	1	JR
92-52-4	Biphenvl	8	1
208-96-8	Acenaphthylene	5	
83-32-9	Acenaphthene	30	
132-64-9	Dibenzofuran	6	1
86-73-7	Fluorene	36	İ
132-65-0	Dibenzothiophene	5	
85-01-8	Phenanthrene	1 3	В
120-12-7	Anthracene	1	U
260-94-6	Acridine	3	บ
86-74-8 	Carbazole	2	ł
206-44-0	Fluoranthene	9	В
129-00-0	Pyrene	9	В
56-55-3	Benzo(A) Anthracene	2	U
218-01-9	Chrysene	4	l
205-99-2	Benzo(B) Fluoranthene	1	J
207-08-9	Benzo(K) Fluoranthene	1	JR
192-97-2	Benzo(E)Pvrene	2	-
50-32-8- 	Benzo(A) Pyrene		שׁ
198-55-0	Pervlene	2	U
193-39-5	Indeno(1.2.3-CD) Pyre	ne 2	U
53-70-3	Dibenz(A,H)Anthracene	e2	U
191-24-2	Benzo(G,H,I)Perylene	3	Ū

Name: ENSECO Contract:

28981-02MSD

GAC-SLP15TMSD-042793
Lab Code: ENSECO Case No.: SDG No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 28981-02MSD

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7629

Level: (low/med) LOW Date Received: 04/27/93

% Moisture: decanted: (Y/N) N Date Extracted: 04/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/04/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

	COMPOUND (1			~
271-89-6	2,3-Dibenzofuran	· ·	5	ט
496-11-7	2.3-Dihydroindene		17	1
95-13-6	1H-Indene		9	
91-20-3	Naphthalene		8	В
4565-32-6	Benzo(B)Thiophene		4	R
91-22-5	Ouinoline		7	
120-72-9	IH-Indole		2	ע
91-57-6	2-Methylnaphthalene_		8	
90-12-0	1-Methylnaphthalene		1	JR
92-52-4	Biphenvl	-	8	
208-96-8	Acenaphthylene		6	
B3-32-9 -	Acenaphthene		34	
132-64-9	Dibenzofuran		7	R
36-73-7	Fluorene		40	-
132-65-0	Dibenzothiophene		6	ł
35-01-8	Phenanthrene		4	В
120-12-7 -	Anthracene		1	J
260-94-6	Acridine		3	U
36-74-8	Carbazole]	2	1
206-44-0	Fluoranthene		10	В
L29-00-0	Pvrene		9	В
56-55-3	Benzo(A) Anthracene		2	[ט
218-01-9	Chrysene		4	
205-99-2	Chrysene Benzo(B)Fluoranthene		2	U
207-08-9	Benzo(K)Fluoranthene		2	U
L92-97-2 -	Benzo(E)Pvrene		2	ł
50-32-8	Benzo(A)Pvrene		2 2 2 2 2 2	U
98-55-0	Pervlene		2	U
93-39-5	Indeno(1,2,3-CD)Pyre	ne	2	U
53-70-3	Dibenz(A.H)Anthracen	e	2	U
91-24-2	Benzo(G,H,I)Perylene		3	Ū

2C WATER SEMIVOLATILE SURROGATE RECOVERY

Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 28981 SAS No.: SDG No.:

EPA SAMPLE		S1 AP)#	S2 (FLU)#	S3 (CHR)#	TOT
01 28981-01 02 28981-02 03 28981-02 04 28981-02 05 28981-02 06 28981-02 07 BLK01	DU FB MS MSD	84 76 74 85 72 71	87 74 75 76 72 76 72	102 37 31 80 83 38 71	000000

QC LIMITS S1 (NAP) = Naphthalene-d8 S2 (FLU) = Fluorene-d10 S3 (CHR) = Chrysene-d12 (14-108) (41-162) (10-118)

[#] Column to be used to flag recovery values
* Values outside of contract required QC limits

D Surrogate diluted out

3C WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

b Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28981

SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: 28981-02

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC #	QC LIMITS REC.
1H-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E) Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	0 2.749 0 1.606 40.34 0	8.925 8.913 7.676 8.485 35.58 4.082 2.178	94 65 81 72 -50 * 43 23	20-150 20-150 20-150 20-150 20-150 20-150 10-150

	SPIKE ADDED	MSD CONCENTRATION	MSD %	8	QC L	IMITS
COMPOUND	(ng/L)	(ng/L)	REC #	RPD #	RPD	REC.
111 Tudono	0 500		93	1	20	20-150
1H-Indene	9.520 9.520	8.818 8.401	59	10	28 28	20-150
Ouinoline	9.520	7.414	78	4	28	20-150
-Methylnaphthalene	9.520	8.044	68	6	28	20-150
luorene	9.520	40.22	-1 *	192 *	28	20-150
Chrysene	9.520	3.844	40	7	28	20-150
Benzo(E) Pyrene	9.520	1.928	20	14	28	10-150

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

BLK01

EPA SAMPLE NO.

) Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28981 SAS No.:

SDG No.:

Lab File ID: C7630

Lab Sample ID: BL042993

Instrument ID:

4500-C

Date Extracted: 04/29/93

Matrix: (soil/water) WATER

Date Analyzed: 05/04/93

Level: (low/med)

Time Analyzed: 2133

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
02 03 04 05	28981-01 28981-02 28981-02DU 28981-02FB 28981-02MS 28981-02MSD	28981-01 28981-02 28981-02DU 28981-02FB 28981-02MS 28981-02MSD	C7625 C7626 C7627 C7636 C7628 C7629	05/04/93 05/04/93 05/04/93 05/05/93 05/04/93 05/04/93

COMMENTS:

) Name: ENSECO Contract:

BLK01

Lab Code: ENSECO Case No.: 28981 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BL042993

Sample wt/vol: 4000 (g/mL) ML Lab File ID: C7630

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 04/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 05/04/93

Injection Volume: 2.0(uL) Dilution Factor: 0.125

GPC Cleanup: (Y/N) N pH: 7.0

		(119/15 01 49/1		
271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2,3-Dihydroindene		1	U
95-13-6	2,3-Dihydroindene 1H-Indene		0.9	U
91-20-3	Naphthalene		2	J
4565-32-6	Benzo(B)Thiophene		0.9	บ
91-22-5	Quinoline		1	บ
120-72-9	1H-Indole		2	U
91-57-6	2-Methylnaphthale	ne	0.9	U
90~12~0~~~~	1-Methylnaphthale	ne	2	U
92-52-4	Biphenyl		4	U
208-96-8	Acenaphthylene		1	U
83-32-9	Acenaphthene		1	ប
132-64-9	Dibenzofuran		1	U
86-73-7	Fluorene		ī	บ
132-65-0	Dibenzothiophene		ī	บ
85~01~8~~~~	Phenanthrene		3	R
120-12-7	Anthracene	 }	1	U
260-94-6	Acridine		3	U
86-74-8	Carbazole		2	Ū
206-44-0	Fluoranthene		ī	J
129-00-0	Pvrene		2	_
56~55~3	Benzo(A) Anthracene		2	บ
218-01-9	Chrvsene		3	Ū
205-99-2	Benzo(B) Fluoranthe	ene	2	บั
207-08-9	Benzo(K)Fluoranthe	ene	2	Ū
192-97-2	Benzo(E)Pyrene		2	Ū
50-32-8	Benzo(A) Pyrene		ž	Ū
198-55-0	Perylene		2	Ŭ
193-39-5	Indeno(1,2,3-CD)Py	rene	2	Ū
53-70-3	Dibenz (A, H) Anthrac	ene	2	Ŭ
	Benzo(G,H,I)Peryle	· · · · · · · · · · · · · · · · · · ·		~

Name: ENSECO

Contract:

ыар Code: ENSECO Case No.: 28981

SAS No.:

SDG No.:

Lab File ID (Standard): C7616

Date Analyzed: 05/04/93

Instrument ID: 4500-C

Time Analyzed: 0958

		IS1(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3 (BAP) AREA #	RT #
	12 HOUR STD UPPER LIMIT LOWER LIMIT	223456 446912 111728	14.67 15.17 14.17	393131 786262 196566	18.47 18.97 17.97	460381 920762 230190	28.42 28.92 27.92
	EPA SAMPLE NO.				======		
01 02 03 04	28981-01 28981-02 28981-02DU 28981-02MS	207888 225166 197949 187728	14.67 14.67 14.67	377532 391469 348480 338017	18.52 18.54 18.54 18.54	270973 328190 338940 364982	28.57 28.57 28.57 28.57
05 06	28981-02MSD BLK01	148393 134256	14.65 14.67	286040 245022	18.52 18.54	284219 269204	28.57 28.57

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A) Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area.

RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

[#] Column used to flag internal standard area values with an asterisk.

^{*} Values outside of QC limits.

Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 28981 SAS No.:

SDG No.:

Lab File ID (Standard): C7635

Date Analyzed: 05/05/93

Instrument ID: 4500-C

Time Analyzed: 1541

	IS1(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
12 HOUR STD UPPER LIMIT LOWER LIMIT EPA SAMPLE	277257 554514 138628	14.65 15.15 14.15	536630 1073260 268315	18.42 18.92 17.92	254035 508070 127018	28.49 28.99 27.99
NO. ====================================	277354	 14.75	578318	18.52	232478	 28.57

IS1 (ACN) = Acenaphthene-D10

IS2 (PHN) = Phenanthrene-D10 IS3 (BAP) = Benzo(A) Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

[#] Column used to flag internal standard area values with an asterisk.

^{*} Values outside of QC limits.



CASE NARRATIVE

FOR

City of St. Louis Park

August 15, 1993

Enseco - RMAL Project Number 030347

Introduction

Seven aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on July 28, 1993. The samples were logged in under RMAL project number 030347. Sample GAC-SLP4TFBD-072793 was extracted and held per the April 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April, 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

The percent recovery for Benzo(E)Pyrene was less than 10% in samples 030347-0001MS/SD. Contractually, it is allowed to have one percent recovery below the minimum QC limit. Since acceptable recovery was achieved for all other spike components (between the range of 24-111%), quantitation was checked and no further action was taken.

Case Narrative - RMAL #030347

August 15, 1993

Page Two

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the calibration curve used was, 20 ng/ml, 40 ng/ml, 240 ng/ml, 600 ng/ml, and 1200 ng/ml.

All samples associated with project 030347 show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the letter (R) on the data sheets (Form I) as per the 1990 QAPP. In many instances, R values are related to internal standards or surrogates, and are not reflected on the data sheets.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by:

Karen F. Germann

Program Administrator

Approved by:/

Randy Greaves Program Manager Date:



SAMPLE DESCRIPTION INFORMATION for City of St. Louis Park

			Sampled		Received	
Lab ID	Client ID	Matrix	Date	Time	Date	
030347-0001-SA 030347-0001-DU 030347-0001-MS 030347-0001-SD 030347-0001-FD 030347-0002-SA	GAC-SLP4T-072793 GAC-SLP4TD-072793 GAC-SLP4TMS-072793 GAC-SLP4TMSD-072793 GAC-SLP4TFB-072793 GAC-SLP4TFBD-072793 GAC-SLP15T-072793	AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS	27 JUL 93 27 JUL 93 27 JUL 93 27 JUL 93 27 JUL 93 27 JUL 93 27 JUL 93		28 JUL 93 28 JUL 93 28 JUL 93 28 JUL 93 28 JUL 93 28 JUL 93 28 JUL 93	



ANALYTICAL TEST REQUESTS for City of St. Louis Park

Lab ID: 030347	Group Code Analysis Description						
0001 , 0001, 0002	A	Polynuclear Aromatic Hydrocarbons, SIM Low Level Prep - PAH/SIM by GC/MS Low Level	N N				
0001	В	Prep - PAH/SIM by GC/MS Low Level	N				



Qualifier Codes and Their Usage

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as discussed for the U flag.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater then 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- C = This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do <u>not</u> apply this flag, instead use a laboratory-defined flag, discussed below.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.

- E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. If one or more compounds have a response greater than full scale, except as noted in Exhibit D, the sample or extract must be diluted and re-analyzed accordingly to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number. NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of each peak should be considered separately, e.g., a diluted analysis is not required for total xylenes unless the concentration of either peak separately exceeds 200 ug/L.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.
- A = This flag indicates that a TIC is a suspected aldol-condensation product.
- X = Other specific flags may be required to properly define the results. If used, they must be fully described, and such description attached to the Sample Data Summary Package and the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".
- R = This flag is used for polyaromatic hydrocarbons which show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion.



☐ Rocky Mountain Analytical Laboratory ☐ Enseco Houston 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

1420 East North Belt Drive Suite 120 Houston, TX 77032 713/987-9767 FAX: 713/987-9769

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PROJECT ST LOUIS PARK (WATER DEPT) SAMPLING COMPANY							T UPON RECEIPT	BY SAMPLING COMPANY		CONDITION OF CONT	ENTS		
							SHIPPING BY			INITIAL CONTENTS TEMP			
_	-D 11E					79:	20				°C		
SAMPLING SITE	<u> </u>					SEAL NUMB	ER	ľ		_1			
TEAM LEADER	PITE					SEAL INTAC	T LIPON RECEIPT			_	FIPT BY I AD		
24	221								352				
DATE	Z Z/		SAMPLE ID/DESCRIPTION		SAM	PLE TYPE	# CONTAINERS	ANALYSIS PA	RAMETERS	RE	MARKS		
7-27-93		FTF-	ACFE -072793		IXLA	MBER	2 6	PPB PA	H	-01	(30351)		
7-27-93	· ·		-5LP15T -07279	3	IXLA	MBER	6	PPT 1		-02	(30397)		
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ENS-4011				White	- C'	Pink -	LAB		7	TO THE REAL PROPERTY.	116		



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Suite 120
Houston, TX 7703

| Enseco Houston | 1420 East North Belt Drive | Suite 120 | Houston, TX 77032 | 713/987-9767 FAX: 713/987-9769

CHAIN OF CUSTODY									713/987-9767	FAX: 713/987-9		
ENSECO CLIENT					SAMPLE SAFE TM CONDITIONS PACKED BY SEAL NUMBER							
	57	Louis	PARK (WATER D	EPT)			T UPON RECEIPT	BY SAMPLI	SEAL NUMBER	TENTS		
SAMPLING COMPAN							SHIPPING BY			INITIAL CONTENTS TEMP.		
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									☐ Done	☐ Contin	ving Until	
TEAM LEADER						SEAL INTAC	T UPON RECEIPT	BY LAB.		CONTENTS TO	EMPERATURE UPON REC	
DATE	2 78	<u> </u>	SAMPLE ID/DESCRIPTION		T CANA		# CONTAINERS		IÁLYSIS PARA	METERS		°C
	HIME										-01	MARKS
7-27-93	 	GAC	-51 P 47 -072793		186	ANBER	6	PP	T PAH	<u>, , , , , , , , , , , , , , , , , , , </u>		
7-27-93		FAC	-51P4TD-072793	3	IXL	<u>AMBER</u>		ومو	T PAH	5_	-01	Du
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RELINQUIS	SHED BY (SIC	GNED)	RECEIVED BY (SIGNED)	DATE	TIME	1 _	TO SHIPPER BY				(81)	110/11/
						METHOD OF SHIPMENT				AIRBIL DO MBER	A ()	
						RECEIVED F	OR LAB		SIGNE		2 34	GEIVED:
						ENGECO SO	OJECT NUMBER		L YVIX	> _	日业	ZV 1993
						ENSECU PRI	303°	47				To,
ENS-4011				White	- C,	Pink -	LAB				V	118



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 713/987-9767
 FAX: 713/987-9769

CHAIN OF	CUSTO	ODY				, U - I					713/987-9767	FAX: 713/987-976
]		S	AMPLE SAI	E'M CONDI		
ENSECO CLIENT			0.4.6			PACKED BY					SEAL NUMBER	
PROJECT	57	LOUIS	PARK LWATER	DEPT		SEAL INTACT	UPON RECEIPT	BY SAMPLING C	OMPANY		CONDITION OF CONT	ENTS
SAMPLING COMPAN	Y					SEALED FOR	SHIPPING BY				INITIAL CONTENTS TO	EMP.
,	n . 4					79.7	N					°C
SAMPLING SITE	7076					SEAL NUMBE	R	SAN	IPLING STATE	is	l <u></u>	
									Done	☐ Contin	uing Until	
TEAM LEADER	7116			**			UPON RECEIPT	BY LAB.		CONTENTS TE	MPERATURE UPON REC	EIPT BY LAB
74	221					Yes		No				°C
DATE	TIME		SAMPLE ID/DESCRIPTION		SAM	PLE TYPE	# CONTAINERS	ANAL	SIS PARA	METERS	RE	MARKS
7-27-93		CAC-S	TLP 4775-072793)	IXL /	917BER	6	PP7	PAI	4 5	01-M	5
7-27-93			1. P49450-07279.		1	MOER			PAR		01-81	>
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<u></u>		CUSTODY TRA	NSFERS PRIOR TO SHIPPING				<u> </u>	<u> </u>	SHIPPI	NG DETAIL	5	100
RELINQUIS	SHED BY (SIC	GNED)	RECEIVED BY (SIGNED)	DATE	TIME	DELIVERED TO	O SHIPPER BY				Silien	4
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								Sid	THE	7		CONTROL CONTROL
						ENSECO PRO	3034	17	V /		E.	no.
ENS-4011				White	- C'	Pink -	LAB	· · · · · · · · · · · · · · · · · · ·			VI.	FIE



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CHAIN OI	- CUST	זעכ							SÅ	MPLE SAFE	M CONDIT	IONS	
ENSECO CLIENT		 					PACKED BY	· · · · · ·				SEAL NUMBER	
PROJECT				 .			SEAL INTACT	UPON RECEIPT B	Y SAMPLING CO	OMPĀNŸ		CONDITION OF CON	TENTS
SAMPLING COMPAN	ĬŸ		***************************************				SEALED FOR	SHIPPING BY	· · · · · · · · · · · · · · · · · · ·			INITIAL CONTENTS	
SAMPLING SITE							SEAL NUMBE	R		PLING STATUS		<u>.</u>	°C
TEAM LEADER							SEAL INTACT	UPON RECEIPT B	BÝ LÁB.		ONTENTS TEN	uing Until MPERATURE UPON RE	CEIPT BY LAD.
DATE	TIME	Ī	SAMPLE ID/DESC	RIPTION		SAMI	<u> </u>	# CONTAINERS		SIS PARAME	TERS	R	EMARKS
7-27-93		FAC	-SLP47FB-0	72793			POBER	6		PAH		-01-FE	
7-27-93			-51 P 41FBD-0		,	IXL A	MAER	a	PPT	PAH	5	-01-FJ	
4-27-93		FAC	-SIP 15T-07	2773		ŀ	mose	~6	PPT	PAH PAH	•		
						1	1 . g 14.74					}	
										i _	· · · · · · · · · · · · · · · · · · ·		
	<u> </u>	CUSTODY	TRANSFERS PRIOR TO SH	IIPPING				<u> </u>		SHIPPING	G DETAILS	ALL S	10
RELINQUI	SHED BY (SIG	(NED)	RECEIVED BY (SIG	NED)	DATE	TIME	DELIVERED 1	O SHIPPER BY		···		AR	ECEIVED
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							ENSECO PRO	JOS4	7			· V	IBITIE!
ENS-4011					White	- c.	Pink -	LAB		7			



SUMMARY

DATA

PACKAGE

FOR

CITY OF SANT LOUIS PARK
RUAL No. 30347

Lab Name: ENSECO

Contract:

30347-01

Lab Code: ENSECO Case No.: 30347 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 30347-01

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7930

Level: (low/med) LOW Date Received: 07/28/93

% Moisture: decanted: (Y/N) N Date Extracted: 07/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 08/03/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ng/L or ug/Kg) ng/L Q

CAS NO.	COMPOUND	(ng/L or ug/kg)	iig/ L	. 4
271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2,3-Dihydroinden	<u> </u>	5 3 0.9	B
95-13-6	1H-Indene	<u> </u>	0.9	lŭ
	Naphthalene		3	BJ
4565-32-6	Benzo(B)Thiophen	9	3 0.9	Ū
91-22-5	Quinoline	~ 	1	Ū
120-72-9	ÎH-Indole		Ž	Ŭ
91-57-6	2-Methylnaphthalo	ene	2 1	B
90-12-0	1-Methylnaphthal	ene	2	Ū
92-52-4	Biphenyl		4	Ü
208-96-8	Acenaphthylene		1	Ū
83-32-9	Acenaphthene		Ī	Ŭ
132-64-9	Dibenzofuran		Ĩ	Ū
86-73-7	Fluorene		1	U
132-65-0	Dibenzothiophene		$\bar{1}$	U
85-01-8	Phenanthrene		3	В
120-12-7	Anthracene		3	Ū
	Acridine		3	U
	Carbazole		2	U
206-44-0	Fluoranthene		1	J
129-00-0	Pvrene		1	J
56-55-3	Benzo(A)Anthrace	ne	2	IJ
218-01-9	Chrysene		3	U
205-99-2	Benzo(B)FTuoranth	nene	2	U
207-08-9	Benzo(K)Fluoranti	nene	2	U
192-97-2	·Benzo(E)Pyrene		2	U
50-32-8	Benzo(A)Pyrene		2	U
198-55-0	Perylèné		2	U
193-39-5	Indeno(1.2.3-CD)	yrene	32112322222223	U
53-70-3	·Dibenz(A,H)Anthra	acene	2	U
191-24-2	Benzo(Ĝ,Ĥ,Í)Peryl	ene	3	U

SAMPLE NO.

Lab Name: ENSECO

Contract:

30347-01DU

Lab Code: ENSECO

Case No.: 30347

SAS No.:

GAC-SLP4TD-072793 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30347-01DU

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C7931

Level:

(low/med) LOW Date Received: 07/28/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 07/29/93

Concentrated Extract Volume:

CAS NO.

500(uL)

Date Analyzed: 08/03/93

Injection Volume:

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

271-89-62,3-Dibenzofuran	_ 5	U
496-11-72,3-Dihydroindene	3	B
95-13-61H-Indene	0.9	U
91-20-3Naphthalene	3	BJ
4565-32-6Benzo(B)Thiophene	[] 0.9	ĮU
91-22-5Ouinoline	[] 1	ŲU
120-72-91H-Indole	2 2 2	U
91-57-62-Methylnaphthalene	2	В
90-12-01-Methylnaphthalene	2	JU
92-52-4Biphenyl	4	U
208-96-8Acenaphthylene		U
83-32-9Acenaphthene	[] 1	U
132-04-9Dibenzoturan	[] 1	U
86-/3-7Fluorene] 1	U
132-65-0Dibenzothiophene	-i 1	U
85-01-8Phenanthrene	- 4	В
12U-12-/Anthracene	-l 1	U
40U-94-6Acridine] 3	U
86-74-8Carbazole	2	U
206-44-0Fluoranthene	1	J
129-00-0Pyrene	1	J
56-55-3Benzo(A)Anthracene	2	Ü
218-01-9Chrysene	⁻ 3	U
205-99-2Benzo(B)Fluoranthene	- 2	U
2U/-U8-9Benzo(K)Fluoranthene	2	U
192-97-2Benzo(E)Pvrene	- 2	U
50-32-8Benzo(A)Pyrene	- 2	Ü
198-55-0Perylene	· 2	Ŭ
193-39-5Indeno(1.2.3-CD)Pyrene	23222222223	บั
53-70-3Dibenz(A,H)Anthracene	1 2	Ŭ
191-24-2Benzo(Ġ,H,I)Perylene	1 3	ŭ

30347-02

Lab Name: ENSECO

Contract:

GAC-SLP15T-072793

Lab Code: ENSECO

Case No.: 30347

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

30347-02

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C7936

Level:

(low/med) LOW

Date Received:

07/28/93

% Moisture:

decanted: (Y/N) N

2.0(uL)

Date Extracted: 07/29/93

Date Analyzed: 08/03/93

Concentrated Extract Volume:

500(uL)

Dilution Factor:

0.119

GPC Cleanup:

Injection Volume:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

SAMPLE NO.

30347-01FB

Lab Name: ENSECO

Contract:

GAC-SLP4TFB-072793

Lab Code: ENSECO

Case No.: 30347

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30347-01FB

Sample wt/vol:

: 4200 (g/mL) ML

Lab File ID: C7932

Level: (

(low/med) LOW

Date Received: 07/28/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 07/29/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 08/03/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

			· 5/ ~	
271-89-6	2,3-Dibenzofuran		5	J
	2,3-Dihydroindene		2	В
95-13-6	1H-Indene	 -	0.9	Ü
91-20-3	Naphthalene		2 0.9 3	BJ
4565-32-6	Benzo(B)Thiophene		0.9	U
91-22-5	Quinoline			U
120-72-9	îH-Indole		1 2 1 2 4	Ü
91-57-6	2-Methylnaphthalene		1	В
90-12-0	1-Methylnaphthalene		2	Ù
92-52-4	Biphenvl		4	U
208-96-8	Acenaphthylene		1	Ü
83-32-9	Acenaphthene		1	U
132-64-9	Dibenzofuran		1	U
86-73-7	Fluorene		1	Ų
132-65-0	Dibenzothiophene		1	U
85-01-8	Phenanthrene		3	В
120-12-7	Anthracene		1	U
260-94-6	Acridine		3	U
86-74-8	Carbazole		2	U
206-44-0	Fluoranthene		1	J
129-00-0	Pyrene		2	
56-55-3	Benzo(A)Anthracene_		2	U
218-01-9	Chrysèné		3	U
205-99-2	Benzo(B)Fluoranthene	;	2	U
207-08-9	Benzo(K)Fluoranthene		2	U
192-97-2	Dan = a / E \ D		2	Ú
50-32-8	Benzo(A)Pyrene		2	U
198-55-0	Pervlene		321223222222222222222222222222222222222	Ü
193-39-5	Indeno(1,2,3-CD)Pyre	ene	2	U
53-70-3	Dibenz(A,H)Anthracer	ne	2	U
191-24-2	Benzo(Ĝ,H,I)Perylene			Ŭ
- · -			_	
	·		 '	

SAMPLE NO.

30347-01FBD

Lab Name: ENSECO

Contract:

GAC-SLP4TFBD-072793

Lab Code: ENSECO

Case No.: 30347

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30347-01FBD

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C7933

Level:

(low/med) LOW Date Received: 07/28/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 07/29/93

Concentrated Extract Volume:

Date Analyzed: 08/03/93

Injection Volume:

2.0(uL)

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

7.0 pH:

500(uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ng/L or ug/Kg) ng/L

CAS NO.	(1.3)		·
271-89-6	2,3-Dibenzofuran	5	U
496-11-7	2.3-Dihydroindene		В
95-13-6	2,3-Dihydroindene 1H-Indene	0.	9 U
91-20-3	Naphthalene	2	BJ
4565-32-6	Benzo(B)Thiophene	0.	9 U
91-22-5	Quinoline	1	U
120-72-9	lH-Indole		U
91-57-6	2-Methylnaphthalene	1	B
90-12-0	l-Methylnaphthalene	2	₹U
92-52-4	Biphenyl	4	U
208-96-8	Acenaphthylene	1	U
83-32-9	Acenaphthene		U
	Dibenzofuran	1	U
86-73-7	Fluorene	1	U
132-65-0	Dibenzothiophene	1	U
85-01-8	Phenanthrene		В
120-12-7	Anthracene	2	U
260-94-6	Acridine	3	∫U
	Carbazole	3 2	Ū
206-44-0	Fluoranthene		Ù
129-00-0	Pyrene	1	U
56-55-3	Benzo(A)Anthracene		U
218-01-9	Chrysene	3	U
205-99-2	Benzo(B)Fluoranthene_	2	U
207-08-9	Benzo(K)Fluoranthene		U
192-97-2	Benzo(E)Pyrene	2	U
50-32-8	Benzo(A)Pyrene	2	U
198-55-0	Perylèné	2	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2 3 2 2 2 2 2 2 2 2	U
53-70-3	Dibenz(A,H)Anthracene_	2	U
101 24 2	Benzo(Ĝ,H,I)Perylene_	1	JR

SAMPLE NO.

30347-01MS

Lab Name: ENSECO

Contract:

GAC-SLP4TMS-072793

Lab Code: ENSECO

Case No.: 30347

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30347-01MS

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C7934

Level:

(low/med) LOW Date Received: 07/28/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 07/29/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 08/03/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

7.0 pH:

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

·		(119/ = 01	-5/5/		
271-89-6	2,3-Dibenzofuran			5	u
496-11-7	2,3-Dihydroindene_			3	B
95-13-6	1H-Indene			11	-
91-20-3	Naphthalene	 		10	В
4565-32-6	Benzo(B)Thiophene_		-	0.9	
91-22-5	Quinoline		-		
120-72-9	lH-Indole		— <u> </u>	6 2 9 2	U
91-57-6	2-Methylnaphthalen	e		ğ	В
90-12-0	1-Methylnaphthalen	e		2	Ũ
92-52-4	Biphenvl	<u> </u>		4	Ŭ
208-96-8	Acenaphthylene			i	Ŭ
83-32-9	Acenaphthene		-	ī	ŭ
132-64-9	Dibenzofuran			ī	ľů
86-73-7	Fluorene			8	
132-65-0	Dibenzothiophene			ĩ	U
85-01-8	Phenanthrene			4	B
120-12-7	Anthracene			i	Ŭ
260-94-6	Acridine			3	ŭ
	Carbazole		 [3 2 1	Ü
206-44-0	Fluoranthene		- ∤	ī	J
129-00-0	Dyrana				J
56-55-3	Benzo(A)Anthracene			2	Ŭ
218-01-9	Chrysono	 		2	•
205-01-3	Benzo(B)Fluoranthe	20		2	U
207-09-0	·Benzo(K)Fluoranthe			5	Ŭ
102 07 2	Dansa (E) Durana	-		2	Ŭ
136-3/-6	Benzo(E)Pyrene		- -	5	Ü
JU-J2-0	Benzo(A)Pyrene			4	
198-55-0	rerylene		<u> </u>	123222222223	Ų
133-33-5	Indeno(1,2,3-CD)Py	rene	_	2	U
53-/0-3	Dibenz(A,H)Anthrace	ene		2	Ü
191-24-2	Benzo(Ġ,Ĥ,Í)Peryle	ne	1	3	U

SAMPLE NO.

Lab Name: ENSECO

30347-01MSD GAC-SLP41MSD-072793

Lab Code: ENSECO Case No.: 30347 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 30347-01MSD

Contract:

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7935

Level: (low/med) LOW Date Received: 07/28/93

% Moisture: decanted: (Y/N) N Date Extracted: 07/29/93

Concentrated Extract Volume:: 500(uL) Date Analyzed: 08/03/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:
CAS NO. COMPOUND (ng/L or ug/Kg) ng/L Q

	,			·
271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2,3-Dihydroindene		3	В
95-13-6	2,3-Dihydroindene		10	1
91-20-3	Naphthalene		9	В
4565-32-6	Benzo(B)Thiophene		0.9	lu
91-22-5	Quinoline			!
120-72-9	lH-Indole		6 2	U
	2-Methylnaphthalene		8	В
90-12-0	l-Methylnaphthalene		8 2 4	lū
92-52-4	Biphenyl		ā	Ιŭ
208-96-8	Acenaphthylene		i	ľŭ
83-32-0	Acenaphthene	 [î	ŭ
132-64-0	Dibenzofuran		i	ŭ
26_73_7	Fluorene		ġ	١٥
132-65-0	Dibenzothiophene		ĭ	u
05-01-0	Phenanthrene		8 1 3 1 3 2	В
120-12-7	Anthracene		1	Ü
250 ON 6	Acridine	 }	2	Ü
200-34-0 06 71 0	Carbazole		3	Ü
205 44 0	Carbazore		4	Ŭ
200-44-0	Fluoranthene			-
129-00-0	Pyrene		Ţ	Ü
00-55-3	Benzo(A)Anthracene_		2	Ų
218-01-9	Chrysèné	 .	2	j
205-99-2	Benzo(B)Fluoranthene	e	2	U
207-08-9	Benzo(K)Fluoranthene	e	2	U
192-97-2	Benzo(E)Pvrene		2	U
50-32-8	Benzo(A)Pyrene		2	U
198-55-0	Pervlene	1	1222222222	U
193-39-5	Indeno(1.2.3-CD)Pvre	ene	2	U
53-70-3	Dibenz(A,H)Anthracer	ne	2	U
101 24 2	Benzo(Ġ,Ĥ,Í)Perylene	<u> </u>	3	Ŭ

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 30347

SAS No.:

SDG No.:

QC LIMITS (14-108) (41-162) (10-118) S1 (NAP) = Naphthalene-d8 S2 (FLU) = Fluorene-d10 S3 (CHR) = Chrysene-d12

[#] Column to be used to flag recovery values* Values outside of contract required QC limitsD Surrogate diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 30347 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 30347-01

COMPOUND	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	(ng/L)	(ng/L)	(ng/L)	REC #	REC.
1H-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	ND 2.904 ND 1.440 ND ND ND	10.54 9.639 6.283 8.794 8.306 3.344 ND	111 71 66 77 87 35 NC	20-150 20-150 20-150 20-150 20-150 20-150 10-150

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC #	% RPD #	QC L: RPD	IMITS REC.
IH-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene Chrysene	9.520 9.520 9.520 9.520 9.520 9.520	10.31 9.353 5.974 8.437 7.902 2.297 ND	108 68 63 74 83 24 NC	3 4 5 4 5 37 * NC	28 28 28 28 28 28 28	20-150 20-150 20-150 20-150 20-150 20-150 10-150

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 30347 SAS No.:

SDG No.:

Lab File ID: C7937

Lab Sample ID: BL072993

Instrument ID:

4500-C

Date Extracted: 07/29/93

Matrix: (soil/water) WATER

Date Analyzed: 08/03/93

Level:(low/med)

LOW

Time Analyzed: 2245

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	30347-01	30347-01	C7930	08/03/93
	30347-01DU	30347-01DU	C7931	08/03/93
03	30347-01FB	30347-01FB	C7932	08/03/93
	30347-01FBD 30347-02	30347-01FBD 30347-02	C7933 C7936	08/03/93 08/03/93
	30347-02 30347-01MS	30347-02 30347-01MS	C7936 C7934	08/03/93
	30347-01MSD	30347-01MSD	C7935	08/03/93

COMMENTS:

SAMPLE NO.

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 30347 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BL072993

Sample wt/vol: 4000 (g/mL) ML Lab File ID: C7937

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 07/29/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 08/03/93

Injection Volume: 2.0(uL) Dilution Factor: 0.125

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ng/L or ug/Kg) ng/L Q

	, .,	
271-89-6	2,3-Dibenzofuran	5 U
496-11-7	2,3-Dihydroindene	-l i lj
95-13-6	1H Indone	- 0.9 Ŭ
	Naphthalene	- 2. J
4565-32-6	Benzo(B) Thiophene	-l ő.əlŭ
4303-32-0	Quinoline	- 0.9 0 1 U
120 72 0	lH-Indole	
120-72-9	In-indole	2 U 2 U
31-2/-0	2-Methylnaphthalene	-1 6 1
90-12-0	l-Methylnaphthalene	
92-52-4	Biphenyl	<u> </u>
208-96-8	Acenaphthylene	<u> </u>
83-32-9	Acenaphthene	<u> </u>
132-64-9	Dibenzofuran	ן ו
86-73-7	Fluorene	[] 1 [U
132-65-0	Dibenzothiophene	1 (U
85-01-8	Phenanthrene	-
120-12-7	Anthracene	-\ 1 \U
260-94-6	Acridine	3 U 2 U 1 U
86-74-8	Carbazole	- 2 U
206-44-0	Fluoranthene	ו ו ו
129-00-0	Pyrene	
56-55-3	Benzo(A)Anthracene	-l ž lū
218-01-9	Chrysene	-l 3 lŭ
205-99-2	Benzo(B)Fluoranthene	-l ž lů
207-08-0	Benzo(K)Fluoranthene	- Ž Ŭ
102-07-2	Benzo(E)Pyrene	
136-31-6	Ponzo / A Dunono	- 2 0
100 EE 0	Benzo(A)Pyrene	-1 5 10
102 20 5	Perylene	1 U U U U U U U U U U U U U U U U U U U
193-39-3	Indeno(1,2,3-CD)Pyrene	2 U
55-/0-5	Dibenz(A,H)Anthracene	2 U
191-24-2	Benzo(G,H,İ)Perylene] 3 U

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 30347

SAS No.:

SDG No.:

Lab File ID (Standard): C7924

Date Analyzed: 08/03/93

Instrument ID: 4500-C

Time Analyzed: 1226

		ISI(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	12 HOUR STD UPPER LIMIT LOWER LIMIT	739231 / 1478462 369616	14.67 15.17 14.17	1410480 2820960 705240	18.45 18.95 17.95	526262 1052524 263131	28.34 28.84 27.84
-	EPA SAMPLE NO.	303010	20000000	700270	3935385	220020000	148 8 55
1 -		22222222	======	********	300000	200000000	2000320
	30347-01	822681	14.67	1576710	18.45	695053	28.47
	30347-01DU 30347-01FB	1041630 1119640	14.67 14.67	1850750 1897570	18.45 18.47	855462 917094	28.47 28.47
	30347-01FBD	1126400	14.67	1939990	18.45	966891	28.47
	30347-02	981049	14.67	1747570	18.45	846683	28.47
	30347-01MS	982847	14.65	1797290	18.42	840157	28.46
	30347÷01MSD	932660	14.67	1653880	18.45	780662	28.47
08 8	3LK01	1059350	14.67	1803540	18.47	872177	28.47

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Service Control

[#] Column used to flag internal standard area values with an asterisk. # Values outside of QC limits.



CASE NARRATIVE

FOR

City of St. Louis Park

September 08, 1993

Enseco - RMAL Project Number 030567

Introduction

Ten aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on August 10, 1993. The samples were logged in under RMAL project number 030567. Sample PCJ-SLP15FBD-080993 was extracted and neighbor the April 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April, 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 030567-0002, -0002DL, -0002RR, and -0004MS showed internal standard(s) which were outside control limits. All instrument calibration, internal standard concentration, etc. were checked and found to be in control. Both samples 0002 and 0004 have components above linear range which necessitated a diluted analyses. It has been concluded that an interference specific to the internal standard(s) is present which resulted in areas outside of control limits. This interference does affect the quantitation of target components. Results may be baised low.



Case Narrative - RMAL #030567 September 08, 1993 Page Two

030567-0004MS/SD percent recovery for Fluorene was reported as NC and outside of QC limits, due to the concentration of this component in the initial sample. 030567-0004MS/SD matrix spike duplicate percent recovery for 1H-Indene was reported outside of QC limits, possibly due to the concentration of this component in the initial sample. 030567-0004MS/SD matrix spike percent recovery for Quinoline was reported above QC limits. 030567-0004MS/SD percent recovery for Benzo(E)Pyrene was just below the QC recovery limits at 9% and 8% respectively. This sample set (030567-0004MSDL/SDDL) was analyzed at a dilution, and the Benzo(E)Pyrene results were unrecoverable due to the dilution. 030567-0004MSDL/SDDL percent recovery for Fluorene was reported as NC and outside of QC limits, due to the concentration of this component in the initial sample. 030567-0004MSDL/SDDL matrix spike duplicate percent recovery for 1H-Indene was reported outside of QC limits, possibly due to the concentration of this component in the initial sample. 030567-0004MSDL/SDDL matrix spike percent recovery for Quinoline was reported above QC limits. 030567-0004MSDL/SDDL percent RPD was just above QC limits for Since sample 030567-0004 had significant concentrations 2-Methylnaphthalene. of target compounds including some of the same compounds which are used in the matrix spike mix, quantitation was checked and no further action was taken.

Samples 030567-0001, -0002, -0004, -0005, -0004DU, -0004MS, and -0004SD, show target compounds above the upper calibration range. The samples were reanalyzed at a dilution. Both the original and reanalysis data are reported for each sample. Surrogate recovery was outside of QC limits for samples 030567-0002 and -0002DL. This sample was reanalyzed and confirmed matrix effect.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the calibration curve used was, 20 ng/ml, 40 ng/ml, 240 ng/ml, 600 ng/ml, and 1200 ng/ml.

All samples associated with project 030567 show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the letter (R) on the data sheets (Form I) as per the 1990 QAPP.



SAMPLE DESCRIPTION INFORMATION for City of St. Louis Park

	63.4 · JD	Mahada	Sampl		Received
Lab ID	Client ID	Matrix	Date	Time	Date
030567-0001-SA 030567-0002-SA 030567-0003-SA 030567-0004-SA 030567-0004-DU 030567-0004-SD 030567-0004-FB 030567-0004-FD 030567-0005-SA	PCJ-W40-080993 PCJ-W403-080993 PCJ-W402-080993 PCJ-SLP15-080993 PCJ-SLP15D-080993 PCJ-SLP15MS-080993 PCJ-SLP15FB-080993 PCJ-SLP15FBD-080993 PCJ-SLP15FBD-080993	AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS	09 AUG 93 09 AUG 93 09 AUG 93 09 AUG 93 09 AUG 93 09 AUG 93 09 AUG 93 09 AUG 93	11:40 13:40	10 AUG 93



Case Narrative - RMAL #030567 September 08, 1993 Page Three

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by:

Karen F. Germann

Project Administrator

Approved by

Julieann L. Kramer Program Manager Date: 91/0/93



Rocky Mountain Analytical Laboratory

□ Enseco Houste 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

1420 East No Suite 120

Drive

Houston, TX 77032 713/987-9767 FAX: 713/987-9769

CHAIN OF CUSTODY	A	ſĭ				TM		
ENSECO CLIENT	/ W. M.		PACKED BY	// / / /	rist	FE™ CONDITI	SEAL NUMBER	
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8/9/9 8:55 #	PCJ-W40-080993	11.	7)	6	PPT-PIL	. 4	AP1-5	-015A
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8/9/2 11:40 /	CJ-6463-080993	1/3	()	6	PPT-PA.	4	PPT-5-	-025A
		0						
3/9/93 13:40 P	(1-60402-080993	1/20	9	6	PPT-PAL	// 	PPT-5	-0351
								
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			RECEIVED FO	OR LAB	SIGNED	Cesuan	DATE/TI	me 1998 09cm
			ENSECO PRO	DJECT NUMBER	30567			
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Rocky Mountain Analytical Laboratory 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

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ENSECO CLIENT						PACKED BY			SAMPLE SAFE CONDI	SEAL NUMBER	-	
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8-9-93		PCJ	-5LP15-080993		182	HYDEK	6	P	PE' PAH	PPT	5	-0451 -04 Du
8-9-93		POJ	-SLP15D-080993		184 8	MAER	6	PP	Z W PAH	PPE	5	-04 De
						1						
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						ENSECO PRO	OJECT NUMBER	309	567			
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LI Rocky Mountain Analytical Laboratory LI Enseco Houston 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

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Drive

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	22					X Yes		No		9.3	°C
DATE	TIME	T	SAMPLE ID/DESCRIPTION		SAME	LE TYPE	# CONTAINERS	AN	ALYSIS PARAMETERS		ARKS
8-9-93		PEJ	SLP 15 MS -0809	93	1X4 A	MAEK	G	PP	T PAH	5 399	- 04 MS
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Drive

Suite 120

Houston, TX 77032 713/987-9767 FAX: 713/987-9769

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AMPLING COMPA	NY			· · · · · · · · · · · · · · · · · · ·		SEALED FOR	S SHIPPING BY			INITIAL CONTENTS TEMP.	
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DATE	TIME		SAMPLE ID/DESCRIPTION		SAMI	PLE TYPE	# CONTAINERS	ANALYSIS PAR	AMETERS	REMARK	<u> </u>
8-9-93		PEJ	-5LP 15 FB -080	993	IXL A	MBER	6	PPE ! P	AH	PPT 5	-04F6
8-9-93		PCJ	-51P 15FBD-080	993		nBER.	1	PPT 4 PI	9.4	PPT 5	-04F1
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~						ENSECO PR	OJECT NUMBER	3054	7	<i>,</i>	
ENS-4011	-			sed to	CHELIT	D: 1	4 4 5				



Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

Suite 120

Drive

Houston, TX 77032 713/987-9767 FAX: 713/987-9769

	F CUSTO	7	γ					SAMPLE S	AFE TM CONDIT	IONS	
NSECO CLIENT	0/	lv	1 111		· · · · · · · · · · · · · · · · · · ·	PACKED BY	110	1		SEAL NUMBER	
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DATE	TIME		SAMPLE ID/DESCRIPT		SAMP	LE TYPE	# CONTAINERS	ANALYSIS PAR	AMETERS	REMAR	KS
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) ·	USTODY T	RANSFERS PRIOR TO SHIPPI	ng	-!		1	SHIP	PING DETAILS		
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ENS-4011				White	- CLIENT	Pink -	LAB				



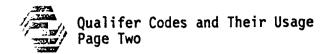
ANALYTICAL TEST REQUESTS for City of St. Louis Park

Lab ID: 030567	Group Code	Analysis Description	Custom Test?
0001 - 0004, 0004 - 0005	Α	Polynuclear Aromatic Hydrocarbons, SIM Low Level Prep - PAH/SIM by GC/MS Low Level	N N
0004	. В	Prep - PAH/SIM by GC/MS Low Level	N



Qualifier Codes and Their Usage

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as discussed for the U flag.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater then 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- C = This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do <u>not</u> apply this flag, instead use a laboratory-defined flag, discussed below.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.



- E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. If one or more compounds have a response greater than full scale, except as noted in Exhibit D, the sample or extract must be diluted and re-analyzed accordingly to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number. NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of each peak should be considered separately, e.g., a diluted analysis is not required for total xylenes unless the concentration of either peak separately exceeds 200 ug/L.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.
- A = This flag indicates that a TIC is a suspected aldol-condensation product.
- X = Other specific flags may be required to properly define the results. If used, they must be fully described, and such description attached to the Sample Data Summary Package and the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".
- R = This flag is used for polyaromatic hydrocarbons which show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion.

SUMMARY

DATA

PACKAGE

FOR

CITY OF SAINT LOUIS PARK

RMAL No: 30567

SAMPLE NO.

30567-04

Lab Name: ENSECO

Contract:

PCJ-SLP15-080993

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Sample wt/vol:

Lab File ID:

C7982

4200 (g/mL) ML

Level:

(low/med) LOW

Date Received: 08/10/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 08/10/93

Lab Sample ID: 30567-04

Concentrated Extract Volume:

CAS NO.

500(uL)

Date Analyzed: 08/13/93

Injection Volume:

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

<i>ono</i> 110.	(J/ - 	
271-89-6	2,3-Dibenzofuran_		5	U
496-11-7	2,3-Dihydroindene 1H-Indene		280	ERT
95-13-6	lH-Indene		19	
91-20-3	Naphthalene		. 5 77	BJ
4505-32-0	Benzo(B)Thiophene		77	l.,
91-22-5 120-72-9	vulno i ine		1	U
120-/2-9	1n-indole 2-Methylnaphthalene		2 2	BR
31-3/-0	1-Methylnaphthalene		11	R
92-52-4	Pinhony		59	
200 06 0	Acenaphthylene	 }	100	RT
200-30-0	Accessh+boso		180	EŤ
132-64-0	Dibenzofuran		48	-'
06 72 7	Eluanono		160	ET
132-65-0	Dibenzothiophene		36	-'
85-01-8	Phenanthrene		7	В
120-12-7	Anthracene	 -	ģ	
260-94-6	Acridino	•	4	R
86-74-8			Ιİ	
206-44-0	Fluoranthene		65	
129-00-0	Pyrene		78	В
56-55-3	Benzo(A)Anthracene_		4	
218-01-9	Chrysene		3	J
205-99-2	Benzo(B)Fluoranthene	!	2	Ū
207-08-9	Benzo(K)Fluoranthene		2	U
192-97-2	Danna / C \ D		2	U
50-32-8	Benzo(A)Pyrene		2	U
198-55-0	Pervlene		3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Ū
193-39-5	Indeno(1,2,3-CD)Pyre	ne	2	Ŭ
53-70-3	Dibenz(A,H)Anthracen	e ———	2	Ŭ
191-24-2	Benzo(Ĝ,Ĥ,Í)Perylene		3	Ü
	, , ,			!
				

SAMPLE NO.

30567-04DL

Lab Name: ENSECO

Contract:

PCJ-SLP15-080993

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30567-04DL

Sample wt/vol:

Lab File ID:

C8018

Date Received: 08/10/93

% Moisture:

Level: (low/med) LOW

Concentrated Extract Volume:

decanted: (Y/N) N

Date Extracted: 08/10/93

500(uL)

Date Analyzed: 08/17/93

Injection Volume:

2.0(uL)

4200 (g/mL) ML

Dilution Factor:

0.595

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ng/L or ug/Kg) ng/L

	· · · · · · · · · · · · · · · · · · ·		
271-89-6	2,3-Dibenzofuran	24	U
496-11-7	2.3-Dihydroindene	560	D
95-13-6	IH-Indene	20	D
91-20-3	Naphthalene	5	BDJ
4565-32-6	Naphthalene Benzo(B)Thiophene	87	D
91-22-5	Ouinoline	7	U
120-72-9	ÎH-Indole	12	U
91-57-6	2-Methylnaphthalene_	4	U
90-12-0	l-Methylnaphthalene	11	DR
92-52-4	Biphenvl	62	D
208-96-8	Acenaphthylene	200	D
83-32-9	Acenaphthene	550	D
132-64-9	Dibenzofuran		D
86-73-7	Fluorene	1 111	D
132-65-0	Dibenzothiophene	33	D
85-01-8	Phenanthrene	7	BD
120-12-7	Anthracene	8 5	DR
260-94-6	Acridine	5	DJR
86-74-8	Carbazole	12	D
206-44-0	Fluoranthene	76	Ď
129-00-0	Pyrene	99	BD
56-55-3	Renzo/AlAnthracene	12	Ü
218-01-9	Chrysene	13	Ü
205-99-2	Chrysene Benzo(B)Fluoranthene	12	Ü
207-08-9	Benzo(K)Fluoranthene_	11	Ū
192-97-2	Benzo(E)Pyrene	9	ľŬ
50-32-8	Benzo(A)Pyrene	11	Ū
198-55-0	Pervlène	12	Ŭ
193-39-5	Indeno(1,2,3-CD)Pyrene	e 10	lŭ
53-70-3	Dibenz(A,H)Anthracene	8	Ιŭ
101 04 0	Benzo(G,H,I)Perylene_		Ιŭ

SAMPLE NO.

30567-04DU

Lab Name: ENSECO

Contract:

PCJ-SLP15D-080993

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30567-04DU

Sample wt/vol:

Lab File ID:

C7996

Level: (low/med) LOW

4200 (g/mL) ML

Date Received: 08/10/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 08/10/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 08/16/93 Dilution Factor:

0.595

Injection Volume:

2.0(uL)

.

GPC Cleanup: CAS NO

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Ka) ng/L

CAS NO.	COMPOUND	(ng/L or ug/Kg) ng/L	Q
271-89-6	2,3-Dibenzofuran	24	
496-11-7	2,3-Dihydroindenë 1H-Indene	560	
95-13-6	1H-Indene	20	
91-20-3	Naphthalene	5	BJ
4565-32-6	Benzo(B)Thiophene		
91-22-5	Quinoline	7	U
	Tu-fudo (6		U
91-57-6	2-Methylnaphthale	ne4	บ
90-12-0	1-Methylnaphthale	ne12	R
92-52-4	Biphenyl	67	
208-96-8	Acenaphthylene	220	
83-32-9	Acenaphthene	600	1
132-64-9	Dibenzofuran	1 49	
	Fluorene	350	1
132-65-0	Dibenzothiophene	37	
85-01-8	Phenanthrene		B
120-12-7	Anthracene	9	
260-94-6	Acridine	14	U
86-74-8	Carbazole	14	
206-44-0	Fluoranthene	17	
129-00-0	Pyrene	95	B
56-55-3	Benzo(A)Anthracen	e 12	JU
218-01-9	Chrysèné	13	U
205-99-2	Benzo(B)Fluoranth Benzo(K)Fluoranth	ene 12	U
207-08-9	Benzo(K)Fluoranth	ene 11	U
192-97-2	Benzo(E)Pyrene) 9	U
50-32-8	Benzo(A)Pyrene		U
198-55-0	Perylene	12	U
193-39-5	Indeno(1,2,3-CD)P	yrene 10	U
53-70-3	Dibenz(A,H)Anthra		U
191-24-2	Benzo(Ĝ,H,I)Peryl	ene 13	ΙŪ

SAMPLE NO.

30567-04FB

Lab Name: ENSECO

Contract:

PCJ-SLP15FB-080993

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30567-04F8

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C7992

Level: (low/med) LOW

Date Received:

08/10/93

% Moisture:

decanted: (Y/N) N

2.0(uL)

Date Extracted: 08/10/93

Concentrated Extract Volume:

500(uL)

• •

Date Analyzed: 08/16/93 Dilution Factor:

0.119

Injection Volume:

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ng/L or ug/Kg) ng/L

	·		·
271-89-6	2,3-Dibenzofuran		5 U
496-11-7	2,3-Dihydroindene		1 U
95-13-6	2,3-Dihydroindene 1H-Indene		0.9 U
91-20-3	Naphthalene		2 BJ
4565-32-6	Naphthalene Benzo(B)Thiophene		0.9 U
91-22-5	Quinoline		1 (U
120-72-9	lH-Indole	 i	2 U
91-57-6	2-Methylnaphthalene		1 B
90-12-0	1-Methylnaphthalene		2 U
92-52-4	Biphenvl		4 U
208-96-8	Acenaphthylene		1 Ú
83-32-9	Acenaphthene		ī lū
132-64-9	Dibenzofuran		ī ļū
86-73-7	Fluorene		ī ļū
132-65-0	Dibenzothiophene_	 [i lŭ
85-01-8	Phenanthrene		- -
120-12-7	Anthracene		2 B 1 U 3 U 2 U 1 U
260-94-6	Acridina		3 lŭ
	Carbazole		ž lŭ
206 44.0-	Fluoranthene		ì Ιŭ
200-44-0	riuoranthene		i BJ
129-00-0	pyrene		2 10
00-00-3	Benzo(A)Anthracene_		5 10
218-01-9	chrysene		3 U
205-99-2	Chrysene Benzo(B)Fluoranthene Benzo(K)Fluoranthene	•	2 U
20/-08-9	Benzo(K)Fluorantnene	9	2 U
92-97-2	Benzo(E)Pyrene		2 U
0-32-8	Benzo(A)Pyrene		2 U
98-55-0	Perylene		2 U
193-39-5	Indeno(1,2,3-CD)Pyre	ene	2 3 2 2 2 2 2 2 2 2 2 2 3
53-70-3	Dibenz(A,H)Anthracen Benzo(G,H,I)Perylene	ne	2 (U
191-24-2	Benzo(G.H.I)Perylene	·	3 U

SAMPLE NO.

Lab Name: ENSECO Contract:

| 30567-04FBD | PCJ-SLP15FBD-080993

Lab Code: ENSECO Case No.: 30567 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 30567-04FBD

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7980

Level: (low/med) LOW Date Received: 08/10/93

% Moisture: decanted: (Y/N) N Date Extracted: 08/10/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 08/13/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

(ng/L or ug/Kg) ng/L 0

CAS NO.	CONFOUND	(lig/L or i			_ _ _
271-89-6	2,3-Dibenzofuran	l		5 U	
496-11-7	2.3-Dihydroinden	e	-	1 10	
95-13-6	IĤ-Indene		-1	0.9/0	
91-20-3	Naphthalene		-	2 B	J
4565-32-6	Benzo(B)Thi ophen	e	-1	ō.9 ŭ	
91-22-5	Ouinoline		- ;	i lu	
120-72-9	IH-Indole			ŽŪ	
91-57-6	2-Methylnaphthal	ene	-	ĪB	
90-12-0	l-Methylnaphthal	ene	-	ŽŪ	
92-52-4	Biphenyl		-	2 U 1 B 2 U 4 U	
208-96-8	Acenaphthylene			i lŭ	
83-32-9	Acenaphthene		-1	i lü	
132-64-9	Dibenzofuran		-1	i Ιŭ	
86-73-7	Fluorene		-1	i lŭ	
132-65-0	Dibenzothiophene		-	i lŭ	
85-01-8	Phenanthrene		-		
20-12-7	Anthracene		- /	ĪŪ	
60-94-6	Acridina			3 U	
86-74-8	Carbazole		-	2 0	
206-44-0	Fluoranthene		-	i j	
29-00-0	Dyrone		-}	i Bj	
6-55-3	Benzo(A)Anthracer		-	2 0	
18-01-9	Chavean	1E	-1	2 10	
05-01-3	Benzo(B)Fluoranth		-1	3 (0	
03-33-2	benzo(b) r luoranti	iene	_}	2 U	
07-00-3	Benzo(K)Fluoranth		- ∤	2 U	
92-9/-2	Benzo(E)Pyrene		_	2 U	
0-32-8	Benzo(A)Pyrene		_}	2 U	
98-55-0	Perylene		_	2 U	
33-39-5	Indeno (1,2,3-CD) P	yrene	_	2 1 3 2 1 1 2 3 2 2 2 2 2 2 2 2 3 3 3 4 4 4 4 4 4 4	
3-/0-3	Dibenz(A,H)Anthra	cene	_	2 U	
91-24-2	Benzo(Ĝ,Ĥ,Ĭ)Peryl	ene	_1	3 U	

SAMPLE NO.

30567-04MS

Lab Name: ENSECO

Contract:

PCJ-SLP15MS-080993

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

30567-04MS

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C7984

Level: (low/med) LOW

Date Received:

08/10/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 08/10/93

Concentrated Extract Volume:

500(uL) Date Analyzed: 08/13/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

0

CAS NO.	COMPOUND (1	ng/ E or	ug/kg/	ng/ L	ų
271-89-6	2,3-Dibenzofuran_			1	J
496-11-7	2,3-Dihydroindene			260	ĒT
95-13-6	IH-Indene			27	1
91-20-3	Naphthalene			11	В
4565-32-6	Benzo(B)Thiophene		—	74	R
91-22-5	Quinoline		—	16	R
120-72-9	lH-Indole			2	lu
91-57-6	2-Methylnaphthalene		-	8	B
90-12-0	1-Methylnaphthalene		-	11	Ŕ
92-52-4	Biphenvl			58	
208-96-8	Acenaphthylene			91	R
83-32-9	Acenaphthene			150	ET
132-64-9	Dibenzofuran		1	47].
86-73-7	Fluorene	-	 }	150	ERT
132-65-0	Dibenzothiophene		-	36	
85-01-8	Phenanthrene			7	В
120-12-7	Anthorono		-	8	
260-94-6	Acridine			4	R
86-74-8	Carbazole		-	11	``
206-44-0	Fluoranthene			63	1
129-00-0	Pyrene			74	В
56-55-3	Benzo(A)Anthracene		-	4	B R
218-01-9	Chrysene		-		``
205-99-2	Benzo(B)Fluoranthene		—j	2	U
207-08-9	Benzo(K)Fluoranthene		-	$\bar{2}$	Ιŭ
192-97-2	0 / E \ D		-	2	Ŭ.
50-32-8	Benzo(A)Pyrene	 -		2	ŭ
198-55-0	Parvlane		-	2	Ü
103-30-5	Indeno(1,2,3-CD)Pyre	ne -	-	7 2 2 2 2 2 2 3	Ü
K3-70-3	Dibenz(A,H)Anthracen	<u></u>	-	2	Ü
101-24-2	Benzo(G,H,I)Perylene	·——	- -	5	Ü
191-64-6	Delizo(d, ii, I) refytelle		-	, , , , , , , , , , , , , , , , , , ,	•

SAMPLE NO.

Lab Name: ENSECO Contract: 30567-04MSDL

Lab Code: ENSECO Case No.: 30567 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 30567-04MSDL

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C7997

Level: (low/med) LOW Date Received: 08/10/93

% Moisture: decanted: (Y/N) N Date Extracted: 08/10/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 08/16/93

Injection Volume: 2.0(uL) Dilution Factor: 0.595

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:
(ng/L or ug/Kg) ng/L Q

496-11-7 95-13-6	2,3-Dibenzofuran 2,3-Dihydroindene 1H-Indene	24 570 28	000
4565-32-6 91-22-5 120-72-9 91-57-6	ÎH-Indole	16 12 8	BDJ D DR U BD
90-12-0 92-52-4 208-96-8 83-32-9	l-Methylnaphthalene	220 600	DR D D D
85-/3-/ 132-65-0 85-01-8 120-12-7	rluorene Dibenzothiophene Phenanthrene Anthracene	350	D BD D
86-74-8 206-44-0 129-00-0	Acridine Carbazole Fluoranthene	14 13 74 90	D BD U
218-01-9 205-99-2 207-08-9 192-97-2	Chrysene Benzo(B)Fluoranthene Benzo(K)Fluoranthene Benzo(E)Pyrene	12 11 9	טט טטט
50-32-8 198-55-0 193-39-5 53-70-3	Benzo(A)Pyrene	11 12 10 8	טטטט

SAMPLE NO.

Lab Name: ENSECO

Contract:

30567-04MSD

Lab Code: ENSECO

Case No.: 30567

SAS No.:

PCJ-SLP15MSD-080993

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

30567-04MSD

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C7985

Level:

(low/med) LOW

Date Received:

08/10/93

% Moisture:

decanted: (Y/N) N

500(uL) 3

Date Extracted: 08/10/93

Concentrated Extract Volume:

Date Analyzed: 08/13/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

		
271-89-62.3-Dibenzofuran	5	U
271-89-62,3-Dibenzofuran 496-11-72,3-Dihydroindene	260	ĔRT
95-13-61H-Indene		
91-20-3Naphthalene	وَّ ا	B !
4565-32-6Benzo(B)Thiophene	67	
91-22-5Quinoline	13	R
120-72-91H-Indole	2	lü l
91-57-62-Methylnaphthalene	7	B
90-12-01-Methylnaphthalene	il é	Ŕ
92-52-4Biphenyl	52	"
208-96-8Acenaphthylene	92	RT
83-32-9Acenaphthene	170	[``
132-64-9Dibenzofuran	41	1' 1
86-73-7Fluorene	160	T [
132-65-0Dibenzothiophene	32]'.]
85-01-8Phenanthrene	7	В
120-12-7Anthracene	l é	ا ا
260-94-6Acridine	1 4	R
86-74-8Carbazole	11	
206-44-0Fluoranthene	60	
129-00-0Pyrene	73	В
56-55-3Benzo(A)Anthracene	73	
218-01-9Chrysene		1 1
205-99-2Benzo(B)Fluoranthene	9	lu l
207-08-9Benzo(K)Fluoranthene	2	ľ
192-97-2Benzo(E)Pyrene	۲	
FO 22 0	2	Ų
50-32-8Benzo(A)Pyrene	2	Ü
198-55-0Perylene	2	U
193-39-5Indeno(1,2,3-CD)Pyrene	6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	U
53-70-3Dibenz(A,H)Anthracene	2	U
191-24-2Benzo(Ĝ,Ĥ,Ĭ)Perylene	3	U
		' <u></u> -

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

30567-04MSDDL

Lab Name: ENSECO

Contract:

PCJ-SLP15MSD-080993

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 30567-04MSDDL

Sample wt/vol:

4200 (g/mL) ML

Lab file ID:

C7998

Level:

(low/med) LOW

Date Received: 08/10/93

% Moisture:

decanted: (Y/N) N

500(uL)

Date Extracted: 08/10/93

Concentrated Extract Volume:

Date Analyzed: 08/16/93

Injection Volume: 2.0(uL)

CAS NO.

COMPOUND

Dilution Factor:

0.595

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

Q

1		<u>, </u>
271-89-62,3-Dibenzofuran	24	Ū
496-11-72.3-Dihydroindene	430	D
i 95-13-6	21	D
91-20-3Naphthalene	9	BDJ
4565-32-6Benzo(B)Thiophene	68	ם
91-22-5Quinoline	12	DR
120-72-9	12	Ü
91-57-62-Methylnaphthalene	6	BD
90-12-0l-Methylnaphthalene	9	DR
92-52-4Rinhenvl	 53	D
208-96-8Acenaphthylene	180	Ď
208-96-8Acenaphthylene 83-32-9Acenaphthene	490	ď
132-04-9Ulbenzoturan	40	l d
86-73-7Fluorene	300	ď
132-65-0Dibenzothiophene	- 31	ă
85-01-8Phenanthrene	 	BD
120-12-7Anthracene	- ' 7	ا وا
260-94-6Acridine	<u> </u>	lŭ l
86-74-8Carbazole		lŏ l
206-44-0Fluoranthene	66	lŏ l
129-00-0Pvrene	— 82	BO
56-55-3Benzo(A)Anthracene	— 12	JU J
218-01-9Chrysene	6	ا توا
205-99-2Benzo(B)Fluoranthene	- 12	ا تنا
207-08-9Benzo(K)Fluoranthene		Ŭ
192-97-2Benzo(E)Pyrene	و م	Ŭ
50-32-8Benzo(A)Pyrene	- ₁₁	lŭ l
109-55-0	1 19	lŭ l
193-39-5Indeno(1,2,3-CD)Pyrene	- io	lŭ l
53-70-3Dibenz(A,H)Anthracene	- 10	ľ
191-24-2Benzo(G,H,I)Perylene	13	Ü
131-14-12 Delizo(d,ii,i)rerytelle	13	
		1

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

QC LIMITS S1 (NAP) = Naphthalene-d8 S2 (FLU) = Fluorene-d10 S3 (CHR) = Chrysene-d12 (14-108) 41-162) (10-118)

[#] Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

3C
WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

O Case No.: 30567

SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: 30567-04

COMPOUND	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	(ng/L)	(ng/L)	(ng/L)	REC #	REC.
1H-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	19.40 5.367 ND 1.856 159.5 2.713 ND	27.25 11.46 16.06 8.473 153.5 6.569 0.843	82 64 168 * 70 NC * 40 9 *	20-150 20-150 20-150 20-150 20-150 20-150 10-150

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC #	% RPD #	QC L1 RPD	MITS REC.
1H-Indene	9.520 9.520 9.520 9.520 9.520 9.520	20.82 8.901 13.09 6.521 157.1 6.355 0.749	15 * 37 138 49 NC * 38 8 *	27 25 20 20 NC * 3 12	28 28 28	20-150 20-150 20-150 20-150 20-150 20-150 10-150

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

3C WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 30567 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: 30567-04DL

COMPOUND	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	(ng/L)	(ng/L)	(ng/L)	REC #	REC.
lH-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	19.81 5.296 ND ND 310.0 ND ND	28.02 11.25 15.53 8.449 354.0 6.426 ND	86 63 163 * 89 462 * 68 NC *	20-150 20-150 20-150 20-150 20-150 20-150 10-150

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC #	% RPD #	· · · · · · ·	TS EC.
1H-Indene- Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	21.06 8.568 12.38 6.128 296.3 6.010 ND	13 * 34 130 64 NC * 63 NC *	28 27 23 32 * 18 7 NC *	28 20 28 20 28 20 28 20 28 20 28 20	-150 -150 -150 -150 -150 -150

[#] Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

48 SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO

Contract:

Lab Code: ENSECO Case No.: 30567 SAS No.:

SDG No.:

Lab File ID: C7981

Lab Sample ID: BL081093

Instrument ID:

4500-C

Date Extracted: 08/10/93

Matrix: (soil/water) WATER

Date Analyzed: 08/13/93

Level:(low/med)

LOW

Time Analyzed: 1609

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	LAB SAMPLE ID	FILE ID	DATE
01 30567-01 02 30567-02 03 30567-02 04 30567-03 05 30567-04 06 30567-04 07 30567-04DU 08 30567-04FB 09 30567-04FB 10 30567-04MS 11 30567-04MSD 13 30567-04MSD 14 30567-04MSD 14 30567-04MSD	30567-01 30567-02 30567-02 30567-03 30567-04 30567-04DL 30567-04FB 30567-04FB 30567-05 30567-04MSD 30567-04MSDL 30567-04MSDL	C7999 C8019 C7994 C7995 C7982 C8018 C7996 C7992 C7980 C8000 C7984 C7985 C7998 C7997	08/16/93 08/17/93 08/16/93 08/16/93 08/13/93 08/16/93 08/16/93 08/16/93 08/13/93 08/13/93 08/16/93 08/16/93

Lab Name: ENSECO Contract: BLK01

Lab Code: ENSECO Case No.: 30567 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLO81093

Sample wt/vol: 4000 (g/mL) ML Lab File ID: C7981

Level: (low/med) LOW Date Received:

% Moisture: decanted: (Y/N) N Date Extracted: 08/10/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 08/13/93

Injection Volume: 2.0(uL) Dilution Factor: 0.125

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

(ng/L or ug/Kg) ng/L Q

271-89-6----2,3-Dibenzofuran U 496-11-7-----2,3-Dihydroindene_ 95-13-6-----IH-Indene 91-20-3-----Naphthalene 4565-32-6----Benzo(B)Thiophene______91-22-5------Quinoline_____ 120-72-9-----1H-Indole 91-57-6-----2-Methylnaphthalene 90-12-0----1-Methylnaphthalene 92-52-4-----Biphenyl 208-96-8-----Acenaphthylene_ 83-32-9-----Acenaphthene 132-64-9-----Dibenzofuran 86-73-7-----Fluorene 132-65-0-----Dibenzothiophene 85-01-8-----Phenanthrene 120-12-7-----Anthracene 260-94-6-----Acridine 86-74-8-----Carbazole 206-44-0-----Fluoranthene 218-01-9-----Chrysène 205-99-2-----Benzo(B)Fluoranthene 207-08-9-----Benzo(K)Fluoranthene 192-97-2-----Benzo(E)Pyrene 50-32-8------Benzo(A)Pyrene 198-55-0-----Perylene 193-39-5-----Indeno(1,2,3-CD)Pyrene 53-70-3------Benzo(G,H,I)Perylene 191-24-2------Benzo(G,H,I)Perylene

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENSECO Contract:

Case No.: 30567 SAS No.: SDG No.: Lab Code: ENSECO

Lab File ID (Standard): C7974 Date Analyzed: 08/13/93

Instrument ID: 4500-C Time Analyzed: 1043

		ISI(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	12 HOUR STD UPPER LIMIT LOWER LIMIT		15.62 16.12 15.12	442517 885034 221258	19.52 20.02 19.02	281826 563652 140913	30.17 30.67 29.67
	EPA SAMPLE NO.	254622548	242222	2222222	202223	,	222222
01 02 03 04	30567-04 30567-04FBD 30567-04MS 30567-04MSD	546112 363040 605242 * 534984	15.60 15.57 15.59 15.59	845840 565550 918962 * 849268	19.50 19.42 19.49 19.49	364649 333300 388297 374678	30.17 30.07 30.16 30.17
05	BLK01	466956	15.60	639690	19.50	292446	30.17

ISI (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk. * Values outside of QC limits.

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Lab File ID (Standard): C7991

Date Analyzed: 08/16/93

Instrument ID: 4500-C

Time Analyzed: 1118

		ISI(ACN) AREA #	RT #	ISZ(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	**********	222222222	2525525	*********	2002082	303505355	332222
	12 HOUR STD	279333	15.69	407484	19.52	219698	30.01
	UPPER LIMIT	558666	16.19	814968	20.02	439396	30.51
	LOWER LIMIT	139666	15.79	> 203742	19.02	109849	29.51
	EPA SAMPLE	722222222	222223	1 22222222	322222		
	NO.		Ì	ļ			
	*********		======	*=======	222222	222222222	======
01	30567-01	354674	15.82	614428	19.65	215172	30.29
02	30567-02DL	804019 *	15.82	806128	19.64	182984	30.19
03	30567-03	520752	15.80	542806	19.62	186806	30.26
04	30567-04DU	326677	15.72	545711	19.55	246820	30.17
05	30567-04FB	292941	15.77	453935	19.57	207518	30.21
06	30567-05	413796	15.82	718539	19.64	222757	30.22
07	30567-04MSDDL	310913	15.80	505312	19.62	214906	30.27
08	30567-04MSDL	334241	15.82	548788	19.65	239512	30.29
ı	/						

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

[#] Column used to flag internal standard area values with an asterisk.* Values outside of QC limits.

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 30567

SAS No.:

SDG No.:

Lab File ID (Standard): C8009

Date Analyzed: 08/17/93

Instrument ID: 4500-C

Time Analyzed: 1249

		ISI(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	12 HOUR STD UPPER LIMIT LOWER LIMIT EPA SAMPLE	353057 706114 176528	15.67 16.17 15.17	515175 1030350 257588	19.54 20.04 19.04	285425 570850 142712	30.02 30.52 29.52
01 02	NO. 30567-02 30567-04DL	1179190 * 400016	15.79 15.80	862248 630705	19.70 19.70	225111 323060	30.17 30.17

IS1 (ACN) = Acenaphthene-D10 IS2 (PHN) = Phenanthrene-D10 IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

3/90

 $[\]mbox{\# Column used to flag internal standard area values with an asterisk.$ $<math display="inline">\mbox{* Values outside of QC limits.}$



CASE NARRATIVE

FOR

City of St. Louis Park

October 28, 1993

Enseco - RMAL Project Number 031555

Introduction

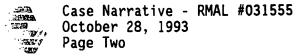
Seven aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on October 05, 1993. The samples were logged in under RMAL project number 031555. Sample GAC-SLP4FBD-100493 was extracted and held per the April 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April, 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

The percent recovery for Benzo(E)Pyrene was below QC limits in samples 031555-0001MS/SD. Contractually, it is allowed to have one percent recovery below the minimum QC limit. Since acceptably recovery was achieved for all other spike components, quantitation was checked and no further action was taken.



Surrogate recovery for chrysene-d12 was outside of QC limits high for sample 031555-0001FB, but all surrogate recoveries were within QC limits for sample 031555-0001FBD. Surrogate recovery for fluorene-d10 was outside of QC limits low for sample 031555-0002. This sample was reanalyzed and confirmed matrix effect.

Phenanthrene was found in BLK01 at 7ng/L. This sample was reanalyzed and phenanthrene's presence was confirmed. All samples associated to the blank contained less than 7 ng/L of phenanthrene with the exception of sample 031555-0002 which reported phenanthrene at 8 ng/L.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the calibration curve used was, 20 ng/ml, 40 ng/ml, 240 ng/ml, 600 ng/ml, and 1200 ng/ml.

All samples associated with project 031555 show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the letter (R) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Kave-f. Hermann
Karen F. Germann
Program Administrator

Date: Oct. 28, 1973

Program Manager



SAMPLE DESCRIPTION INFORMATION for City of St. Louis Park

			Samp1e	ed Rec	eived
Lab ID	Client ID	Matrix	Date	Time D	ate
031555-0001-SA 031555-0001-DU 031555-0001-MS	GAC-SLP4T-100493 GAC-SLP4TD-100493 GAC-SLP4TMS-100493	AQUEOUS AQUEOUS AQUEOUS	04 OCT 93 04 OCT 93 04 OCT 93	05	OCT 93 OCT 93 OCT 93
031555-0001-SD 031555-0001-FB 031555-0001-FD	GAC-SLP4TMSD-100493 GAC-SLP4TFB-100493 GAC-SLP4TFBD-100493	AQUEOUS AQUEOUS AQUEOUS	04 OCT 93 04 OCT 93 04 OCT 93	05 05	OCT 93 OCT 93 OCT 93
031555-0002-SA	GAC-SLP10T-100493	AQUEOUS	04 OCT 93		OCT 93



ANALYTICAL TEST REQUESTS for City of St. Louis Park

Lab ID: 031555	Group Code	Analysis Description	Custom Test?
0001 , 0001, 0002	A	Polynuclear Aromatic Hydrocarbons, SIM Low Level Prep - PAH/SIM by GC/MS Low Level	N N
0001	В	Prep - PAH/SIM by GC/MS Low Level	N



Qualifier Codes and Their Usage

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as discussed for the U flag.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater then 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- C = This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do <u>not</u> apply this flag, instead use a laboratory-defined flag, discussed below.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.

- E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. If one or more compounds have a response greater than full scale, except as noted in Exhibit D, the sample or extract must be diluted and re-analyzed accordingly to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number. NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of each peak should be considered separately, e.g., a diluted analysis is not required for total xylenes unless the concentration of either peak separately exceeds 200 ug/L.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.
- A = This flag indicates that a TIC is a suspected aldol-condensation product.
- X = Other specific flags may be required to properly define the results. If used, they must be fully described, and such description attached to the Sample Data Summary Package and the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".
- R = This flag is used for polyaromatic hydrocarbons which show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion.



CHAIN OF CUSTODY

☐ Rocky Mountain Analytical Laboratory ☐ Enseco Houston 4955 Yarrow Street Arvada, CO 80002

1420 East Nort

Suite 120

Drive

303/421-6611 FAX: 303/431-7171 Houston, TX 77032 713/987-9767 FAX: 713/987-9769

				-,,			الـ			SAMPLE SA	FE''' CONDI	TIONS		
NSECO CLIENT	,		0			-	PACKED BY	100				SEAL NUMBER		
PROJECT	<u> </u>	1 60	UIS PARK	WAL	ER DE	7 J	SEAL INTACT	19/ TUPON RECEIPT B	Y SAMPLIN	G COMPANY		CONDITION OF CO	NTENTS	
SAMPLING COMPAN							CEAL ED EOR	SHIPPING BY			 	INITIAL CONTENTS	TEMP.	
												INITIAL CONTENTS		°C
SA)	1) &.			 .			アカル SEAL NUMBE	R		SAMPLING STATE	JS	<u> </u>		
S / / /	15									☐ Done	☐ Contin			<u> </u>
				•			SEAL INTACT	TUPON RECEIPT B			CONTENTS TE	MPERATURE UPON R	2,7	
DATE	TIME		SAMPLE ID/DES	CRIPTION		SAM		# CONTAINERS		ALYSIS PARA	METERS	T	REMARKS	
														- I ER
10-4-93		670	<u> </u>	10047	3	186	AMBER	6		U PM	H	PPL		
10-4-93		GAL	51 P4FB-	100493		186	AMBER	6	PI	T PRI	4	PPT	5	- 1 FB
10-4-93		RAC	-56P10T-1	100493		181	nnaer	6	PP	T PAL	,	799 799	5	~ 2
	-	12.2.2	34707	00 1 1 -		122	411111			<u> </u>		1,,,,,,	<u> </u>	
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					·······				• •					
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	··· · · · · · · · · · · · · · · · ·													
<u></u>		CUSTODY	TRANSFERS PRIOR TO S	HIDDING		<u> </u>		<u></u>		CUIDD	ING DETAIL	<u> </u>		
		 1	TRANSIERS FRIOR TO 3				DELIVERED	TO SHIPPER BY		Jnirr	THO DETAIL	<u>.</u>		
RELINQUIS	SHED BY (SIG	NED)	RECEIVED BY (SIC	GNED)	DATE	TIME	METHOD OF	290						
				-								AIRBILL NUMBER	. 544	
							RECEIVED FO	OR LAB	<i>X</i>	SIGNED	0.4	AIRBILL NUMBER	DATE/TIME	
			· 					emil			veu		10-5-	93 830
			•				ENSECO PRO	DJECT NUMBER	7	51555				
NS-4011					White	- CLIENT	Pink -	IAR						



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1420 East Nort. Suite 120

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Houston, TX 77032

_			
CHV	IN	ΩE.	CUSTODY
		v.	CUSICLI

HAIN OF CUSTODY										713/987-976	7 FAX:	713/987-9769	
						SAMPLE SAFE ^{IM} CONDITIONS							
NSECO CLIENT						PACKED BY		•		SEAL NUMBER			
CITY	0F 5	T LO	UIS PARK WAT	TER DE	T	17.	2 39/ UPON RECEIPT BY		·				
ROJECT /				•	•	SEAL INTACT	UPON RECEIPT BY	/ SAMPLIN	IG COMPANY	CONDITION OF CO	ONTENTS		
AMPLING COMPAN	<u></u>					SEALED FOR	SHIPPING BY			INITIAL CONTENT	5 TEMP.		
5- A A						71.7	0/					°C	
AMPLING SITE	<u> </u>			···.		SEAL NUMBE			SAMPLING STATUS				
TAM	- مرا								Done Cor	ntinuing Until			
EAM LEADER		-				1	UPON RECEIPT BY		CONTENT	S TEMPERATURE UPON			
7029	D/					Yes Yes		No			<u> </u>	<i>5</i> ℃	
DATE	TIME		SAMPLE ID/DESCRIPTION		SAME	PLE TYPE	# CONTAINERS	AN	ALYSIS PARAMETERS		REMARKS		
								v	OF ON	200-	سر	1 -2	
0-4-23		GAC	-5LP4F-100493		1XL	AMBER	6	<u></u>	PL PAH	PPO			
1/1 37		200	-56P4TD-100493		1	A A .EA	6	O	PE PAH	207	_	100	
10-4-73		UMO	-367 410-100912		186	AMBEK	<u> </u>			110		1001	
[}											
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		<u> </u>											
		CUSTODY	TRANSFERS PRIOR TO SHIPPING						SHIPPING DET	AllS			
						DELIVERED 1	TO SHIPPER BY				•		
RELINQUIS	SHED BY (SIGI	NED)	RECEIVED BY (SIGNED)	DATE	TIME								
				 		METHOD OF	SHIPMENT			AIRBILL NUMBER			
		ĺ			•	F	n FX			21034	2084	41	
						RECEIVED FO	DR LAB		SIGNED	21034 Ch=	DATE/TIM	Œ	
							an		Ille	Chs	10-	593 8	
						ENSECO PRO	DJECT NUMBER	7	1555				
	<u></u>	l							11775				
NS-4011	-			White	- CUENT	Pink -	LAR						



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303/421-6611 FAX: 303/431-7171 Houston, TX 77032 713/987-9767 FAX: 713/987-9769 **CHAIN OF CUSTODY** SAMPLE SAFETM CONDITIONS ENSECO CLIENT PACKED BY SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY LOUIS PARK WATER DEPT CONDITION OF CONTENTS SEALED FOR SHIPPING BY INITIAL CONTENTS TEMP. SAMPLING COMPANY °C 27 7 9V SEAL NUMBER SAMPLING STATUS Continuing Until ☐ Done TEAM LEADER SEAL INTACT UPON RECEIPT BY LAB CONTENTS TEMPERATURE UPON RECEIPT BY LAB. Ø Yes □ No SAMPLE ID/DESCRIPTION DATE TIME SAMPLE TYPE # CONTAINERS **ANALYSIS PARAMETERS** REMARKS PPT PAH IXL AMBER 10-4-93 10-4-43

RECEIVED FOR LAB SIGNED DATE:		HIPPING DETAILS		CUSTODY TRANSFERS PRIOR TO SHIPPING				
METHOD OF SHIPMENT FED EX RECEIVED FOR LAB RECEIVED FOR LAB ARBILL NUMBER 21034208 DATE: 10				1	DATE	RECEIVED BY (SIGNED)	RELINQUISHED BY (SIGNED)	
RECEIVED FOR LAB SIGNED DATE:	'4/	210342084/	METHOD OF SHIPMENT					
	TIME	1 Declio DATESTIME 10-5-9	RECEIVED FOR LAB					
ENSECO PROJECT NUMBER 31555		31555	ENSECO PROJECT NUMBER					

Pink - LAB

White - CLIENT

SUMMARY

DATA

PACKAGE

FOR

CITY OF SAINT LOUIS PARK RMAL NO: 31555

31555-01

Lab Name: ENSECO

Contract:

GAC-SLP4T-100493

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31555-01

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8194

Level:

(low/med) LOW Date Received: 10/05/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/07/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/15/93 Dilution Factor:

0.119

Injection Volume:

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

2.0(uL)

(ng/L or ug/Kg) ng/L

Q

	(
271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2.3-Dihydroindene		ĺ	J
95-13-6	2,3-Dihydroindene 1H-Indene		0.9	
91-20-3	Naphthalene		4	BJ
4565-32-6	Benzo(B)Thiophene	 [0.9	
91-22-5	Quinoline	 }	_	BJ
120-72-0	lH-Indole		1 2 3	ไบ๊
91-57-6	2-Methylnaphthalene		รั	B
90-12-0	1-Methylnaphthalene		ĭ	j
92-52-4	Rinhenvl		À	Ιŭ
208-96-8	Acenaphthylene		1	Ιŭ
83-33-0	Acenaphthene		1 1	ĺŭ
132-64-0	Dibenzofuran		2	ľ
86-73-7	Eluonono	 -	2	В
132.65.0-	Dibenzothiophene		1	Ü
05 01 0	Dibenzothiophene		11	В
120 12 7	Phenanthrene		11	Ü
260-94-6	Anthracene		7	ŭ
			3	Ü
206 44 0	Carbazole		4	
120 00 0	Fluoranthene		4	В
129-00-0	ryrene		2	B U
210 01 0	Benzo(A)Anthracene		2	
218-01-9	unrysene		3	Ü
203-99-2	Benzo(B)Fluoranthene		2	U
207-08-9	Benzo(K)Fluoranthene		2	U
192-9/-2	Benzo(E)Pyrene		2	Ų
50-32-8	Benzo(A)Pyrene		2	Ü
198-55-0	rerylene		242232222222	บ
193-39-5	Indeno(1,2,3-CD)Pyre	ne	2	Ü
53-70-3	Dibenz(A,H)Anthracen	e	2	U
191-24-2	Benzo(Ĝ,Ĥ,ĺ)Perylene		3	U

SAMPLE NO.

31555-01DU

Q

Lab Name: ENSECO Contract:

GAC-SLP4TD-100493

Lab Code: ENSECO Case No.: 31555 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 31555-01DU

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C8195

Level: (low/med) LOW Date Received: 10/05/93

% Moisture: decanted: (Y/N) N Date Extracted: 10/07/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 10/15/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ng/L or ug/Kg) ng/L

271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2.3-Dihydroindene		ĭ	IJ
95-13-6	2,3-Dihydroindene_ 1H-Indene_		Ō.9	
91-20-3	Naphthalene		3	BJ
4565-32-6	Benzo(B)Thiophene		0.9	
91-22-5	Quinoline		1	lŭ
120-72-0	lH-Indole		2	lŭ
01_57_6_	2-Methylnaphthalene		2 2	В
91-37-0	1-Methylnaphthalene		7	j
30-12-0	Biphenyl		1	Ŭ
200 06 0	bipnenyi		4	
208-90-8	Acenaphthylene		Ţ	U
83-32-9	Acenaphthene		Ţ	U
132-64-9	Dibenzofuran		Ţ	
86-/3-/	Fluorene		2	B
132-65-0	Dibenzothiophene		Ţ	ñ
85-01-8	Phenanthrene		8	В
120-12-7	Anthracene		1	U
260-94-6	Acridine		3	U
86-74-8 <i>-</i>	Carbazole		2	U
206-44-0	Fluoranthene		3	В
129-00-0	Pyrene		2	В
56-55-3	Benzo(A)Anthracene_		2	U
218-01-9	Chrysene		3	U
205-99-2	Benzo(B)Fluoranthen	2	2	Ū
207-08-9	Benzo(K)Fluoranthen	2	2	Ū
192-97-2	Danza/E\Duwana		2	Ŭ
50-32-8	Benzo(A)Pyrene		2	Ŭ
198-55-0	Perylene		5	Ŭ
193-39-5	Indeno(1,2,3-CD)Pyro	ane	81323223222222	Ŭ
53-70-3	Dibenz(A,H)Anthrace	10	5	Ŭ
101_24_2	Benzo(G,H,I)Perylen		3	Ŭ
191-64-6	benzo(d,n,1)reryren	·	١	U

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

31555-01FB

Lab Name: ENSECO

Contract:

GAC-SLP4TFB-100493

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31555-01FB

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8193

Level:

(low/med) LOW Date Received:

10/05/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/07/93

Concentrated Extract Volume:

CAS NO.

500(uL)

Date Analyzed: 10/15/93

Injection Volume:

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

Q

	COMPOUND	(119/ 2 01	ug/ kg/ 11g/ L		•
271-89-6	2,3-Dibenzofur	an		5	U
496-11-7	2.3-Dihydroinde	ene		ĩ	IJ
95-13-6	2,3-Dihydroinde			Ō.9	
91-20-3	Naphthalene			2	BJ
4565-32-6	Benzo(B)Thiophe	ne		0.9	
91-22-5	Quinoline			ĭ	Ιŭ
120-72-9	ÎH-Indole			Ž	Ιŭ
91-57-6	2-Methylnaphtha	Inna		ĩ	B
90-12-0	1-Methylnaphtha	lone		Ž	Ιŭ
92-52-4	Biphenyl			Ā	Ιŭ
300-0E 0	Acenaphthylene		 -{	7	Ŭ
200-30-0	Aconaphthone			1	Ŭ
03-32-9 122 64 0	Acenaphthene			1	Ŭ
132-04-9	Fluorene			1	Ü
122 CE 0	riuorene			1	Ü
132-03-0	Dibenzothiopher	ie		1	
55-UI-8 120 10 7	Phenanthrene			3	В
120-12-/	Anthracene			1	Ü
	Acridine			3	Ü
	Carbazole			2	Ü
206-44-0	Fluoranthene			Ť	IJ
129-00-0	Pyrene			Ţ	IJ
00-55-3	Benzo(A)Anthrac	:ene	- _	2	IJ
218-01-9	Chrysène		<u></u>	3	U
205-99-2	Benzo(B)FTuoran	thene		2	U
207-08-9	Benzo(K)Fluoran	ithene		2	U
192-97-2	Benzo(E)Pyrene_			2	U
50-32-8	Benzo(A)Pyrene			2	U
198-55-0	Pervlene			2	U
193-39-5	Indeno(1,2,3-CD)Pyrene_		12322222223	U
53-70-3	Dibenz(A.H)Anth	racene		2	U
101 24 2	Benzo(Ġ,Ĥ,Í)Per	wlone	 1	၁ i	Ü

31555-01FBD

Lab Name: ENSECO

Contract:

GAC-SLP4TFBD-100493

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31555-01FBD

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8164

Level: (low/med) LOW

Date Received: 10/05/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/07/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/11/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

Q

		 ,
271-89-62,3-Dibenzofuran	5	u
496-11-72.3-Dihydroindene	ĺĺĺ	j l
496-11-72,3-Dihydroindene 95-13-61H-Indene	0.9	ŭ
91-20-3Naphthalene	2	BJ
4565-32-6Benzo(B)Thiophene	ō.9	บั
91-22-5Quinoline	l i'l	Ŭ
120-72-91H-Indole]	ŭ
91-57-62-Methylnaphthalene	ī	B
90-12-01-Methylnaphthalene	Ž	ŭ
92-52-4Biphenyl	1 4	ŭΙ
208-96-8Acenaphthylene	i	ŭ
83-32-9Acenaphthene	i i l	ŭ
132-64-9Dibenzofuran	i i	ĭi i
86-73-7Fluorene	i	B
132-65-0Dibenzothiophene	i	บั
85-01-8Phenanthrene	5	B
120-12-7Anthracene	1 1	ŭ
260-94-6Arridine	1 2	ŭΙ
86-74-8Carbazole	3	ŭ
206-44-0Fluoranthene	2	B
129-00-0Pyrene	2	BJ
F6 F5 2 Panza / A VAnthusana	1 1	U
56-55-3Benzo(A)Anthracene	6	ŭ
218-01-9Chrysèné	3	
205-99-2Benzo(B)Fluoranthene	2	រ៉
207-08-9Benzo(K)Fluoranthene	2	U
192-97-2Benzo(E)Pyrene	2	U
50-32-8Benzo(A)Pyrene	2	U [
198-55-0Perylèné		U
193-39-5Indeno(1,2,3-CD)Pyrene	2	U
53-70-3Dibenz(A,H)Anthracene		Ų į
191-24-2Benzo(G,H,I)Perylene	3	U

31555-02 Lab Name: ENSECO Contract:

GAC-SLP10T-100493

Lab Code: ENSECO Case No.: 31555 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 31555-02

Sample wt/vol: Lab File ID: 4200 (g/mL) ML C8196

Level: (low/med) LOW Date Received: 10/05/93

decanted: (Y/N) N Date Extracted: 10/07/93 % Moisture:

Concentrated Extract Volume: 500(uL) Date Analyzed: 10/15/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0 **CONCENTRATION UNITS:**

CAS NO. COMPOUND (ng/L or ug/Kg) ng/L 0

271-89-6	2,3-Dibenzofuran	5	U
496-11-7	2.3-Dihvdroindene	40	{
95-13-6	2,3-Dihydroindene 1H-Indene	0.9	lu
91-20-3	Naphthalene	<u>-</u> 2	BJ
4565-32-6	Benzo(B)Thiophene	 5	}
91-22-5	Quinoline	ī	lυ
120-72-9	1H-Indole	2 1 2 1 2 1 2 1 2	lŭ
91-57-6	2-Methylnaphthalene	—	В
00 12 0	1-Methylnaphthalene	_	Ιŭ
00 E0 4	Biphenyl	I f	j
92-32-4 200 06 0	bipnenyi	—l	U
208-90-8	Acenaphthylene	_ ,4	
83-32-9	Acenaphthene	10	
132-64-9	Dibenzofuran		
86-/3-/	Fluorene	_ 4	В
132-65-0	Dibenzothiophene	_ 1	บ
85-01-8	Phenanthrene	_ 8	В
120-12-7	Anthracene	1	υ
260-94-6	Acridine	_ 3	U
86-74-8	Carbazole	2	U
206-44-0	Fluoranthene	_ 3	В
129-00-0	Pyrene	_l 2	В
56-55-3	Benzo(A)Anthracene	- 2	U
218-01-9	Chrysène	_ <u> </u>	Ū
205-99-2	Benzo(B)Fluoranthene	- j	Ŭ
207-08-9	Benzo(K)Fluoranthene	- 5	Ŭ
192-97-2	Benzo(E)Pyrene	- 5	Ŭ
50-32-8	Benzo(A)Pyrene	- 5	Ŭ
109_EE 0	Populono	- 5	Ŭ
190-33-0	Perylene Indeno(1,2,3-CD)Pyrene	8 1 3 2 3 2 2 3 2 2 2 2 2 2 2 2 2 3 3 2 2 3 3 2 2 3 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Ü
13J-JJ-J 13 70 2	Dibenz(A,H)Anthracene	- 5	Ü
101 24 2	Dibenz(A, n) Anthracene	_	
171-24-2	Benzo(Ġ,Ĥ,Ĭ)Perylene	3	U

31555-01MS

Lab Name: ENSECO

Contract:

GAC-SLP4TMS-100493

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31555-01MS

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8167

Level: (low/med) LOW

% Moisture:

Date Received: 10/05/93

decanted: (Y/N) N

Date Extracted: 10/07/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/11/93 Dilution Factor:

0.119

Injection Volume: GPC Cleanup:

(Y/N) N

7.0 pH:

CONCENTRATION UNITS:

CAS NO.

COMPOUND

2.0(uL)

(ng/L or ug/Kg) ng/L

Q

	(
271-89-6	2,3-Dibenzofuran		5	U
496-11-7	2.3-Dihydroindene		ì	IJ
95-13-6	2,3-Dihydroindene 1H-Indene		5	}
91-20-3	Naphthalene		Ř	В
4565-32-6	Benzo(B)Thiophene		8 0.9	lű
91-22-5	·-~-Quinoline		6	B
120-72-9	·ÎH-Indole		2	lŭ
91-57-6	2-Methylnaphthalene		6 2 7	В
90-12-0	l-Methylnaphthalene		2	Ιŭ
92-52-4	Rinhenvl		Ā	ĺΰ
208-96-8	Acenaphthylene		1	Ιŭ
83-32-9	Aconanhthono	······································	i	Ιŭ
132-64-9	Dibenzofuran		i	lĭi
86-73-7	Fluorene		Ė	B
132-65-0	Dibenzothiophene		ĭ	ΙŬ
85-01-8	Phenanthrene	 -	6	B
120-12-7	Anthracene		ĭ	ΙŬ
260-94-6	Acridina		3	lŭ
86-74-8	Canhazolo		3 2 2	lŭ
206-44-0	Fluoranthene		2	В
129-00-0	Dyrono		1	BJ
56-55-3	Benzo(A)Anthracene_		2	Ü
219-01-0	- Chrysona		2	IJ
205-00-2	Chrysene Benzo(B)Fluoranthene		2	Įŭ
207-08-0	Benzo(K)Fluoranthene		2	ŭ
102.07.2	Benzo(E)Pyrene		2	Ŭ
En 22 0	Popzo (A) Dynama	··	2	Ŭ
198-55-0	Benzo(A)Pyrene		2	
102 20 5	Indone/1 2 2 CD\Duise		2	U
173-37-3	Indeno (1,2,3-CD) Pyre	=ne	2222222223	U
33-/U-3	Dibenz(A,H)Anthracen	ie	2	Ų
191-24-2	Benzo(Ĝ,Ĥ,Ĭ)Perylene		3	U

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: FNSECO

Contract:

31555-01MSD

Lab Code: ENSECO

Case No.: 31555

SAS No.:

GAC-SLP4TMSD-100493 SDG No.:

Matrix: (soil/water) WATER

decanted: (Y/N) N

Lab Sample ID: 31555-01MSD

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8168

Level:

(low/med) LOW Date Received: 10/05/93

% Moisture:

Date Extracted: 10/07/93

Concentrated Extract Volume:

500(uL) Date Analyzed: 10/11/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

0

271-89-6-----2,3-Dibenzofuran_ 496-11-7-----2,3-Dihydroindene_ 95-13-6-----1H-Indene____ 5159072814111713132112322222223 U JR 91-20-3-----Naphthalene 4565-32-6-----Benzo(B)Thiophene U 91-22-5-----Quinoline 120-72-9-----1H-Indole B 91-57-6----2-Methylnaphthalene В 90-12-0----1-Methylnaphthalene J 92-52-4-----Biphenyl Ū 208-96-8-----Acenaphthylene UUU 83-32-9------Acenaphthene_ 132-64-9------Dibenzofuran_ B 86-73-7-----Fluorene 132-65-0-----Dibenzothiophene BU 85-01-8-----Phenanthrene 120-12-7-----Anthracene 260-94-6-----Acridine U 86-74-8-----Carbazole Ū 206-44-0-----Fluoranthene BJ 129-00-0------Pyrene 56-55-3-----Benzo(A)Anthracene_ U U U U Ū Ū 193-39-5-----Indeno(1,2,3-CD)Pyrene U 53-70-3-----Dibenz(A,H)Anthracene U 191-24-2-----Benzo(Ġ,H,Í)Perylene

2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

QC LIMITS S1 (NAP) = Naphthalene-d8 S2 (FLU) = Fluorene-d10 S3 (CHR) = Chrysene-d12 14-108) 41-162

[#] Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: 31555-01

COMPOUND	SPIKE	SAMPLE	MS	MS	OC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	(ng/L)	(ng/L)	(ng/L)	REC #	REC.
1H-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	ND 3.796 0.9639 2.642 2.320 ND ND	5.046 7.818 5.807 6.807 6.497 2.428 ND	53 42 51 44 44 26 NC	20-150 20-150 20-150 20-150 20-150 20-150 10-150

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC #	% RPD #	QC L RPD	IMITS REC.
1H-Indene. Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	5.498 9.472 6.831 7.949 7.223 2.666 ND	58 60 62 56 52 28 NC	9 19 16 15 11 9 NC	28 28 28 28 28 28 28	20-150 20-150 20-150 20-150 20-150 20-150 10-150

 $[\]sp{\#}$ Column to be used to flag recovery and RPD values with an asterisk $\sp{*}$ Values outside of QC limits

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Lab File ID:

C8162

Lab Sample ID: BL100793

Instrument ID:

4500-C

Date Extracted: 10/07/93

Matrix: (soil/water) WATER

Date Analyzed: 10/11/93

Level:(low/med)

Time Analyzed: 1713

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

SAMPLE NO.	SAMPLE ID	FILE ID	DATE ANALYZED
01 31555-01	31555-01	C8194	10/15/93
02 31555-01DU	31555-01DU	C8195	10/15/93
03 31555-01FB	31555-01FB	C8193	10/15/93
04 31555-01FBD	31555-01FBD	C8164	10/11/93
05 31555-02	31555-02	C8196	10/15/93
06 31555-01MS	31555-01MS	C8167	10/11/93
07 31555-01MSD	31555-01MSD	C8168	10/11/93

1X ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

BLK01

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

BL100793

Sample wt/vol:

4000 (q/mL) ML

Lab File ID:

C8162

Level:

LOW (low/med)

Date Received:

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/07/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/11/93

Injection Volume:

2.0(uL)

Dilution Factor:

0.125

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Q

CAS NO.

COMPOUND

(ng/L or ug/Kg) ng/L

271-89-6-----2,3-Dibenzofuran____ 496-11-7-----2,3-Dihydroindene__ 95-13-6------1H-Indene____ 1 0.9 U 91-20-3-----Naphthalene 9 9 12124111117132212322222223 J 4565-32-6-----Benzo(B)Thiophene 91-22-5----Quinoline Ū 91-57-6----2-Methylnaphthalene U 90-12-0----1-Methylnaphthalene Ŭ 92-52-4-----Biphenyl Ù 208-96-8-----Acenaphthylene 83-32-9-----Acenaphthene U 132-64-9-----Dibenzofuran U 86-73-7-----Fluorene 132-65-0-----Dibenzothiophene U U Ū U 205-99-2-----Benzo(B)Fluoranthene 207-08-9-----Benzo(K)Fluoranthene 192-97-2-----Benzo(E)Pyrene U U U 50-32-8-----Benzo(A)Pyrene_ Ū U 198-55-0----Perylene 193-39-5-----Indeno(1,2,3-CD)Pyrene_ 53-70-3------Dibenz(A,H)Anthracene_ 191-24-2-----Benzo(G,H,I)Perylene_ U Ū

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31555

SAS No.:

SDG No.:

Lab File ID (Standard): C8161

Date Analyzed: 10/11/93

Instrument ID: 4500-C

Time Analyzed: 1627

		ISI(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
		========			2002220	3020886000	
	12 HOUR STD	380579	15.87	628678	19.72	691538	30.32
	UPPER LIMIT	761158	16.37	1257356	20.22	1383076	30.82
	LOWER LIMIT	190290	15.37	314339	19.22	345769	29.82
	=========	========	======	========	======	*******	======
	EPA SAMPLE NO.						
	==========	========	======	========	======		======
01	31555-01FBD	563032	15.85	902164	19.72	869110	30.24
02	31555-01MS	715176	15.84	1186210	19.70	1237090	30.31
03	31555-01MSD	650107	15.85	1056860	19.72	1067930	30.32
04	BLK01	570666	15.85	989680	19.70	733570	30.32
		·		l	l		l

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

 $[\]mbox{\#}$ Column used to flag internal standard area values with an asterisk. $\mbox{*}$ Values outside of QC limits.

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 31555 SAS No.: SDG No.:

Lab File ID (Standard): C8192 Date Analyzed: 10/15/93

Instrument ID: 4500-C Time Analyzed: 1120

		ISI(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	12 HOUR STD UPPER LIMIT	459063 918126	15.47 15.97	871252 1742504	19.27 19.77	631704 1263408	29.67 30.17
,	LOWER LIMIT EPA SAMPLE	229532	14.97	435626 =======	18.77	315852	29.17
21	NO.		222222		======	015051	======
01 02 03	31555-01 31555-01DU 31555-01FB	916298 816588 693024	15.45 15.45 15.45	1553430 1218440 1327470	19.25 19.25 19.27	815251 611501 591744	29.66 29.66 29.66
04		915552	15.44	1171700	19.25	618379	29.64

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.



CASE NARRATIVE

FOR

City of St. Louis Park

October 25, 1993

Enseco - RMAL Project Number 031568

Introduction

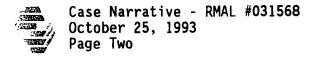
Nine aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on October 06, 1993. The samples were logged in under RMAL project number 031568. Sample GAC-SLP10FBDEX-100593 was extracted and held per the April 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH) plus extended list.

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April, 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

031568-0001MS/SD matrix spike percent recovery for Benzo(E)Pyrene was reported outside of QC limits low. Quantitation was checked and no further action was taken. Fluorene was reported outside of QC limits low for 031568-0001MSD. Quantitation was checked and no further action was taken.



Sample 031568-0002 showed target compounds above the upper calibration range. The sample was reanalyzed at a dilution. Both the original and reanalysis data are reported for this sample.

The analysis of sample 031568-BL101193 showed surrogate recovery of Chrysene-d12 outside QC limits high. This blank was associated only to sample 031569-0001MSD, which exhibited acceptable surrogate recovery. Quantitation was checked, and no further analytical action was taken.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the calibration curve used was, 20 ng/ml, 40 ng/ml, 240 ng/ml, 600 ng/ml, and 1200 ng/ml.

All samples associated with project 031568 show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the letter (R) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by:

Kan. T. Her

Project Administrator

Approved by:

Julieann L. Kramer Program Manager Date: Oct 28, 1993

Date: 1/7 - 5/1/2"-



SAMPLE DESCRIPTION INFORMATION for City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date Time	Received Date
031568-0001-SA 031568-0001-DU 031568-0001-MS 031568-0001-SD 031568-0001-FB 031568-0001-FD 031568-0002-SA 031568-0004-SA	GAC-SLP10TEX-100593 GAC-SLP10TDEX-100593 GAC-SLP10TMSEX-100593 GAC-SLP10TMSDEX-100593 GAC-SLP10TFBEX-100593 GAC-SLP10TFBDEX-100593 GAC-SLP10FEX-100593 GAC-SLP4FEX-100593 GAC-SLP4TEX-100593	AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS AQUEOUS	05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93 05 OCT 93	06 OCT 93 06 OCT 93 06 OCT 93 06 OCT 93 06 OCT 93 06 OCT 93 06 OCT 93 06 OCT 93



ANALYTICAL TEST REQUESTS for City of St. Louis Park

Lab ID: Group 031568 Code		Analysis Description	Custom Test?
0001 , 0001, 0002 - 0004	A	Polynuclear Aromatic Hydrocarbons, SIM Low Level	Y
0001		Prep - PAH/SIM by GC/MS Low Level	N
0001	В	Prep - PAH/SIM by GC/MS Low Level	N



Qualifier Codes and Their Usage

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as discussed for the U flag.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater then 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- C = This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do <u>not</u> apply this flag, instead use a laboratory-defined flag, discussed below.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified target compound.

Enseco Incorporated 4955 Yarrow Street Arvada, Colorado 80002 303/421-6611 Fax: 303/431-7171

- E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. If one or more compounds have a response greater than full scale, except as noted in Exhibit D, the sample or extract must be diluted and re-analyzed accordingly to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number. NOTE: For total xylenes, where three isomers are quantified as two peaks, the calibration range of each peak should be considered separately, e.g., a diluted analysis is not required for total xylenes unless the concentration of either peak separately exceeds 200 ug/L.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.
- A = This flag indicates that a TIC is a suspected aldol-condensation product.
- X = Other specific flags may be required to properly define the results. If used, they must be fully described, and such description attached to the Sample Data Summary Package and the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".
- R = This flag is used for polyaromatic hydrocarbons which show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion.

Li Rocky Mountain Analytical Laboratory Li Enseco Houston 4955 Yarrow Street Arvada, CO 80002 303/421-6611 FAX: 303/431-7171

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Suite 120

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DATE					· · ·		⊿ Yes	لـا 	No			·	3.7 ℃	
DATE	TIME		SAMPLE ID/DES	CRIPTION		SAMP	LE TYPE	# CONTAINERS	ANAL	YSIS PARA	METERS	RE	MARKS	
10-5-93		GAC	-SLPIOTEX	- 10059	3 -01	IXL	AMBER	6	PPT	PAH	<u>, </u>	EXTEND	ED PI	94
10-5-93		GAC	-SLPIOTDEX	-100593	-01Du	IXL	<u>AMBER</u>	6	PPT	PAH		EXTEND	ED P	94
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		CUSTODY	TRANSFERS PRIOR TO S	HIPPING						SHIPPI	NG DETAILS	S		
RELINQUIS	SHED BY (SIG	NED)	RECEIVED BY (SIG	GNED)	DATE	TIME	DELIVERED METHOD OF	TO SHIPPER BY						
							ا ما	_				AIRBILL NUMBER		
			·				FE	OR LAB	,	ALCOHOL:		2103420	25,52	
							,		MC SK	DO	lho	2103420	10/6/93	870
		-					ENSECO PR	OJECT NUMBER		315	55	31568		
				:			1			1				

SUMMARY

DATA

PACKAGE

FOR

CITY OF SAINT LOUIS PARK RMAL NO: 31568

SAMPLE NO.

Lab Name: ENSECO

Contract:

31568-01 GAC-SLP10TEX-100593

Lab Code: ENSECO

Case No.: 31568

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31568-01

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8171

Level:

(low/med) LOW Date Received:

10/06/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

CAS NO.

500(uL)

Date Analyzed: 10/12/93

Injection Volume:

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

7.0 pH:

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

271-89-62,3-Dibenzofuran	5	U
496-11-72,3-Dihydroindene	⁻ 53	-
95-13-61H-Indene	-\	lu
91-20-3Naphthalene	 1	J
4565-32-6Benzo(B)Thiophene	2 4	١
91-22-5Quinoline	- i	lu
120-72-91H-Indole	- 2	lŭ
91-57-62-Methylnaphthalene	- î	
90-12-01-Methylnaphthalene	- †	JR
92-52-4Biphenyl	1 2 4	IJ"
200 06 0 Accomply to the second		Ŕ
208-96-8Acenaphthylene	- 17	~
83-32-9Acenaphthene 132-64-9Dibenzofuran		
	_ 2	İ
86-73-7Fluorene	_	١
132-65-0Dibenzothiophene	_	U
85-01-8Phenanthrene	_ 5	l ·
120-12-7Anthracene	_ 1	U
260-94-6Acriding	_ 3	U
86-74-8Carbazole	<u> </u>	U
206-44-0Fluoranthene	_ 2	
129-00-0Pyrene	⁻ 2	
56-55-3Benzo(A)Anthracene	⁻ 2	U
218-01-9Chrysene	3	U I
205-99-2Benzo(B)Fluoranthene	_	Ū
207-08-9Benzo(K)Fluoranthene	- <u>2</u>	Ũ
192-97-2Benzo(E)Pyrene	- 2	Ŭ
50-32-8Benzo(A)Pyrene	- 5	Ŭ
198-55-0Perylene	- 5	Ŭ
193-39-5Indeno(1,2,3-CD)Pyrene	- 5	ŭ
53-70-3Dibenz(A,H)Anthracene	- 5	Ü
101 24.2 Ponzo/C U I Ponylono	1 3 2 2 2 2 2 3 2 2 2 2 2 2 2 2 2 2 2 2	Ü
191-24-2Benzo(G,H,I)Perylene 57-97-67,12-Dimethylbenz(A)Anthracene	<u>.</u> 3	Ŭ
5/-5/-0/, 12-Dimethylbenz(A)Anthracent	ا ي	
56-40-53-Methylcholanthrene	_ 4	U

SAMPLE NO.

Lab Name: ENSECO

Contract:

31568-01DU

Lab Code: ENSECO

Case No.: 31568

SAS No.:

GAC-CLPIOTDEX-100593 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31568-01DU

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8197

Level:

(low/med) LOW Date Received:

10/06/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/15/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

7.0 pH:

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

271-89-62,3-Dibenzofuran	
496-11-72,3-Dihydroindene 72 95-13-61H-Indene 1 91-20-3Naphthalene 3 4565±32-6Benzo(B)Thiophene 4 91-22-5Quinoline 1 120-72-9IH-Indole 2 91-57-62-Methylnaphthalene 2 90-12-0I-Methylnaphthalene 2 92-52-4Biphenyl 2 208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Anthracene 1	u
95-13-61H-Indene 1 91-20-3Naphthalene 3 4565-32-6Benzo(B)Thiophene 4 91-22-5Quinoline 1 120-72-91H-Indole 2 91-57-62-Methylnaphthalene 2 90-12-01-Methylnaphthalene 2 92-52-4Biphenyl 2 208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 9 120-12-7Anthracene 1 1 1 1 1 1 1 1 1	
91-20-3Naphthalene 3 4565±32-6Benzo(B)Thiophene 4 91-22-5Quinoline 1 120-72-9lH-Indole 2 91-57-62-Methylnaphthalene 2 90-12-0Biphenyl 2 208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7	1
91-22-5Quinoline 1 120-72-9	J
91-22-5Quinoline 1 120-72-9	Ř
120-72-91H-Indole 2 91-57-62-Methylnaphthalene 2 90-12-01-Methylnaphthalene 2 92-52-4Biphenyl 2 208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	ĴЯ
208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	Ŭ.
208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	
208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	R
208-96-8Acenaphthylene 1 83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	Ĵ
83-32-9Acenaphthene 19 132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	Ιŭ
132-64-9Dibenzofuran 2 86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	
86-73-7Fluorene 8 132-65-0Dibenzothiophene 1 85-01-8Phenanthrene 9 120-12-7Anthracene 1	ŀ
85-01-8Phenanthrene 9 120-12-7Anthracene 1	}
12U-12-/Anthracene	J
12U-12-/Anthracene]
	U
86-74-8Carbazole 2 206-44-0Fluoranthene 4 129-00-0Pyrene 3 56-55-3Benzo(A)Anthracene 2 218-01-9Chrysene 3 205-99-2Benzo(B)Fluoranthene 2 207-08-9Benzo(K)Fluoranthene 2 192-97-2Benzo(E)Pyrene 2 50-32-8	Ù
206-44-0Fluoranthene 4 129-00-0Pyrene 3 56-55-3Benzo(A)Anthracene 2 218-01-9Benzo(B)Fluoranthene 2 207-08-9Benzo(K)Fluoranthene 2 192-97-2Benzo(E)Pyrene 2 192-97-2	lŭ
129-00-0Pyrene 3 56-55-3Benzo(A)Anthracene 2 218-01-9Chrysene 3 205-99-2Benzo(B)Fluoranthene 2 207-08-9Benzo(K)Fluoranthene 2 192-97-2Benzo(E)Pyrene 2 50-32-8Benzo(A)Pyrene 2	1
56-55-3Benzo(A)Anthracene 2 218-01-9Chrysene 3 205-99-2Benzo(B)Fluoranthene 2 207-08-9Benzo(K)Fluoranthene 2 192-97-2Benzo(E)Pyrene 2 50-32-8Benzo(A)Byrene 2	
218-01-9Chrysèné 3 205-99-2Benzo(B)Fluoranthene 2 207-08-9Benzo(K)Fluoranthene 2 192-97-2Benzo(E)Pyrene 2 50-32-8	U
205-99-2Benzo(B)Fluoranthene 2 207-08-9Benzo(K)Fluoranthene 2 192-97-2Benzo(E)Pyrene 2 50-32-8	lū
207-08-9Benzo(K)Fluoranthene 2 192-97-2Benzo(E)Pyrene 2 50-32-8	Ū
192-97-2Benzo(E)Pyrene	U
50-32-9	U
50-52-6	U
198-55-0Perylèné 2	U
193-39-5Indeno(1,2,3-CD)Pyrene2	U
53-70-3Dibenz(A,H)Anthracene 2 191-24-2Benzo(G,H,I)Perylene 1 57-97-67,12-Dimethylbenz(A)Anthracene 3	U
191-24-2Benzo(G,H,I)Perylene	J
57-97-67,12-Dimethylbenz(A)Anthracene 3	U
56-49-53-Methylcholanthrene 4	Ū

SAMPLE NO.

Lab Name: ENSECO Contract: 31568-01FB

Lab Code: ENSECO

Case No.: 31568

SAS No.:

GAC-SLPIOTFBEX-100593 SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID:

31568-01FB

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8178

Level:

(low/med) LOW Date Received:

10/06/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/12/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

7.0 pH:

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

271-89-62,3-Dibenzofuran	5	U
496-11-72,3-Dihydroindene	Ĭ	J
95-13-61H-Indene	l ña	ľŭ
91-20-3Naphthalene	3.3	j
4565-32-6Benzo(B)Thiophene	0.9 3 0.9	lŭ
91-22-5Quinoline	1 0.3	ŭ
120-72-91H-Indole	1 2 2 1 4	ŭ
91-57-62-Methylnaphthalene	2	U
91-5/-0Z-Methylnaphthalene	2	٠,
90-12-01-Methylnaphthalene	1	ij
92-52-4Biphenyl	4	Ü
208-96-8Acenaphthylene	<u>l</u>	U
83-32-9Acenaphthene	1	U
132-64-9Dibenzofuran	1	U
86-73-7Fluorene	1	U
132-65-0Dibenzothiophene	1	U
85-01-8Phenanthrene	5	
120-12-7Anthracene	1	U
260-94-6Acridine	3	U
86-74-8Carbazole	2	Ŭ
206-44-0Fluoranthene	2	
129-00-0Pyrene	5	
56-55-3Benzo(A)Anthracene	2	U
218-01-9Chrysene	2	Ŭ
205-99-2Benzo(B)Fluoranthene	5	Ŭ
207-08-9Benzo(K)Fluoranthene	2	Ŭ
102 07 2 Penns (F) Pursus	2	
192-97-2Benzo(E)Pyrene	2	Ü
50-32-8Benzo(A)Pyrene	2	U
198-55-0Perylèné	2	Ŭ.
193-39-5Indeno(1,2,3-CD)Pyrene	2	U
53-/0-3Dibenz(A,H)Anthracene	2	U
53-70-3		U
57-97-67,12-Dimethylbenz(A)Anthracene		U
56-49-53-Methylcholanthrene	4	U

SAMPLE NO.

Lab Name: ENSECO

Contract:

31568-01FBD

Lab Code: ENSECO

GAC-SLPIOTFBDEX-100593 SDG No.:

Case No.: 31568 SAS No.:

Matrix: (soil/water) WATER

Lab Sample ID:

31568-01FBD

Sample wt/vol:

4200 (g/mL) ML

Lab File ID:

C8179

Level:

(low/med) LOW Date Received: 10/06/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/12/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

7.0 pH:

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

	(3/	3, 3,	•
271-89-6	2,3-Dibenzofuran	5	U
496-11-7	2,3-Dihydroindene	i	ij
95-13-6	1H-Indene	0.9	lŭ
91-20-3	Naphthalene	3	ij
4565-32-6	Benzo(B)Thiophene) ŏ.9	Ιŭ
01-22-5	Quinoline	1 1	ľŭ
120-72-0	ÎH-Indole	1 2	Ĭŭ
91-57-6	2-Methylnaphthalene	2 2 2 4	١
91-37-0	1-Methylnaphthalene	2	lυ
92-52-4	Pinhony!	1 7	Ιŭ
300 06 0	Acenaphthylene	1	Ιŭ
200-90-0	Acenaphthone	1	Ü
122 64 0	Acenaphthene	1 1	Ü
		1 1	
	Fluorene	1	ט .
132-65-0	Dibenzothiophene	1	U
85-01-8	Phenanthrene	4	١
120-12-7	Anthracene	1	Į U
260-94-6	Acridine] 3	U
86-74-8	Carbazole] 2	U
206-44-0	Fluoranthene] 2	j _
129-00-0	Pyrene] 1	J
56-55-3	Benzo(A)Anthracene	2	U
218-01-9	Chrysene	3	ľ
205-99-2	Benzo(B)Fluoranthene	2	U
207-08-9	Benzo(K)Fluoranthene	2	U
192-97-2	Benzo(E)Pyrene	2	U
50-32-8	Benzo(A)Pyrene	2	U
198-55-0	Perylèné	2	U
193-39-5	Indeno(1.2.3-CD)Pyrene	2	Ü
53-70-3	Dibenz(A.H)Anthracene	$\bar{2}$	Ŭ
191-24-2	Dibenz(A,H)Anthracene Benzo(G,H,I)Perylene 7,12-Dimethylbenz(A)Anthracene	1 3 2 2 1 2 3 2 2 2 2 2 2 2 2 2 3 3 3	Ŭ
57-97-6	7.12-Dimethylbenz(A)Anthracene	3	Ŭ
56-49-5	3-Methylcholanthrene	ă	Ŭ
30 4 3 3	o notify tenoraliting ene	,	
		l	

SAMPLE NO.

31568-02

Lab Name: ENSECO Contract:

GAC-SLP10FEX-100593

Lab Code: ENSECO Case No.: 31568 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 31568-02

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C8198

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) N Date Extracted: 10/09/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 10/15/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ng/L or ug/Kg) ng/L Q

271-89-62,3-Dibenzofuran	1	J
496-11-72.3-Dihydroindene	120	RT
496-11-72,3-Dihydroindene 95-13-61H-Indene	1 11	1,,,
91-20-3Naphthalene	1 4	J
4565-32-6Benzo(B)Thiophene	45	ŘT
91-22-5Quinoline		lii l
120-72-91H-Indole	2 2	lü l
91-57-62-Methylnaphthalene	ī	Ř
90-12-01-Methylnaphthalene	13	R
92-52-4Biphenyl	39	RT
208-96-8Acenaphthylene	49	RT
208-90-6Acenaphthylene		\f`
83-32-9Acenaphthene	87	
132-64-9Dibenzofuran	39	RT
86-73-7Fluorene	79	T
132-65-0Dibenzothiophene	33	1 1
85-01-8Phenanthrene	23	1
120-12-7Anthracene	5	
260-94-6Acridine	j 4	
86-74-8Carbazole	6	1
206-44-0Fluoranthene	65	RT
129-00-0Pyrene	60	IR
56-55-3Benzo(A)Anthracene	2	JR
56-55-3Benzo(A)Anthracene 218-01-9Chrysene	3	1 1
205-99-2Benzo(B)Fluoranthene 207-08-9Benzo(K)Fluoranthene	2	U
207-08-9Benzo(K)Fluoranthene	2	ו ט
192-97-2Benzo(E)Pyrene	2	lu l
50-32-8Benzo(A)Pyrene	į Ž	lŭ l
198-55-0Perylene	$\bar{2}$	lū l
193-39-5Indeno(1,2,3-CD)Pyrene	5	lŭ l
53-70-3Dibenz/A H)Anthracene	2 3 2 2 2 2 2 2 3 3	lŭ l
191-24-2Renzo(G H I)Pervlene	{\bar{\bar{\bar{\bar{\bar{\bar{\bar	lŭ
191-24-2Benzo(G,H,I)Perylene 57-97-67,12-Dimethylbenz(A)Anthracene	. 3	lŭ l
56-49-53-Methylcholanthrene	4	lŭ
JO-43-JJ-methy I tho I all the elle	,	
		.

SAMPLE NO.

Lab Name: ENSECO Contract: 31568-02DL

GAC-SLP10FEX-100593
Lab Code: ENSECO Case No.: 31568 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 31568-02DL

Sample wt/vol: 4000 (g/mL) ML Lab File ID: C8188

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) N Date Extracted: 10/09/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 10/12/93

Injection Volume: 2.0(uL) Dilution Factor: 0.595

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

(ng/L or ug/Kg) ng/L Q

·		
271-89-62,3-Dibenzofuran 496-11-72,3-Dihydroindene 95-13-61H-Indene 91-20-3Naphthalene 4565-32-6Benzo(B)Thiophene 91-22-5Quinoline 120-72-91H-Indole 91-57-62-Methylnaphthalene 90-12-01-Methylnaphthalene 92-52-4Biphenyl 208-96-8Acenaphthylene 83-32-9Acenaphthene 132-64-9Dibenzofuran 86-73-7Fluorene 132-65-0Dibenzothiophene 85-01-8Phenanthrene 120-12-7Anthracene 260-94-6Acridine 86-74-8Carbazole 206-44-0Fluoranthene 129-00-0	26 540 15 5 110 6 10 4 18 71 130 370 78 290 29 20 6 14 5 78	UDDDD JR DDDD DDDDDDDDDDDDDDDDDDDDDDDDDDD
92-52-4Biphenyl 208-96-8Acenaphthylene 83-32-9Acenaphthene 132-64-9	71 130 370 78 290	0000
85-01-8Phenanthrene 120-12-7Anthracene 260-94-6Acridine 86-74-8Carbazole 206-44-0Fluoranthene 129-00-0Pyrene	6 14 5 78	U U DJ D
56-55-3Benzo(A)Anthracene	12 14 14 12 10 12	
198-55-0Perylene 193-39-5Indeno(1,2,3-CD)Pyrene 53-70-3Benzo(A,H)Anthracene 191-24-2Benzo(G,H,I)Perylene 57-97-67,12-Dimethylbenz(A)Anthracene 56-49-53-Methylcholanthrene	14 10 8 14 14 18	ככטככנ

SAMPLE NO.

Lab Name: ENSECO Contract: 31568-03

Lab Code: ENSECO

Case No.: 31568

SAS No.:

GAC-SLP4FEX-100593

Matrix: (soil/water) WATER

SDG No.:

4200 (g/mL) ML

Lab Sample ID: 31568-03

Sample wt/vol:

Lab File ID:

C8199

Level:

(low/med) LOW Date Received:

10/06/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

CAS NO.

500(uL)

Date Analyzed: 10/15/93

Injection Volume:

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

7.0 pH:

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

CAS NO.	(119, 2.0	,, 49/19/ 119/ 5	٧
271-89-6	2,3-Dibenzofuran	5	U
496-11-7	2,3-Dihydroindene	 72	
95-13-6	1H-Indene	<u> </u>	
91-20-3	Naphthalene		JR
4565-32-6	Benzo(B)Thiophene	16	
91-22-5	Quinoline	1	U
120-72-9	lH-Indole	2	Ü
91-57-6	2-Methylnaphthalene	l 1	
90-12-0	1-Methylnaphthalene	2 4	lu
92-52-4	Biphenyl	<u>4</u>	Ū
208-96-8	Acenaphthylene	1	U
83-32-9	Acenaphthene	 48	
132-64-9	Dibenzofuran	1	U
86-73-7	Fluorene	1	U
132-65-0	Dibenzothiophene	 1	U
85-01-8	Phenanthrene	7	
120-12-7	Anthracene	i	U
260-94-6	Acridine	1	J
86-74-8	Carbazole	8	
206-44-0	Fluoranthene	3	
129-00-0	Pvrene	3	
56-55-3	Benzo(A)Anthracene	2	U
218-01-9	Chrysene		lυ
205-99-2	Benzo(B)Fluoranthene	2	Ü
207-08-9	Benzo(K)Fluoranthene	l2	U
192-97-2	Benzo(E)Pyrene	2	U
50-32-8	Benzo(A)Pyrene		U
198-55-0	Perylene		U
193-39-5	Indeno(1,2,3-CD)Pyrene	2	U
53-70-3	Dibenz(A.H)Anthracene		Įυ
191-24-2	Benzo(Ġ,Ĥ,Í)Perylene 7,12-Dimethylbenz(A)Anthr	3 3 2 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3	U
57-97-6	7,12-Dimethylbenz(A)Anthr	acene 3	U
56-49-5	3-Methylcholanthrèné	4	U
			- ' ——

SAMPLE NO.

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 31568 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 31568-04

Sample wt/vol: 4200 (g/mL) ML Lab File ID: C8174

Level: (low/med) LOW Date Received: 10/06/93

% Moisture: decanted: (Y/N) N Date Extracted: 10/09/93

Concentrated Extract Volume: 500(uL) Date Analyzed: 10/12/93

Injection Volume: 2.0(uL) Dilution Factor: 0.119

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:

(ng/L or ug/Kg) ng/L Q

271-89-62,3-Dibenzofuran	5	U
496-11-72,3-Dihydroindene 95-13-61H-Indene	l i	lŭ
95-13-6	0.9	lŭ
91-20-3Naphthalene	3.3	ľj
4565-32-6Benzo(B)Thiophene	3	ŭ
91-22-5Quinoline		ŭ
120-72-91H-Indole	1 2 2 2 4	Ŭ
91-57-62-Methylnaphthalene	5	U
90-12-01-Methylnaphthalene	5	U
92-52-4Biphenyl	7	Ŭ
208-96-8Acenaphthylene	1	Ŭ
22 22 0 Accompletions	1 1	Ŭ
83-32-9Acenaphthene 132-64-9Dibenzofuran	1	Ŭ
132-04-9Urbenzoruran	1 1	
86-73-7Fluorene		บ
132-65-0Dibenzothiophene	1	U
85-01-8Phenanthrene	4	
120-12-7Anthracene	1	Ü
260-94-6Acridine	3	U
86-74-8Carbazole	2	U
206-44-0Fluoranthene	2	
129-00-0Pyrene	· I	J
56-55-3Benzo(A)Anthracene	2	U
218-01-9Chrysene	3	U
205-99-2Benzo(B)Fluoranthene	2	U
207-08-9Benzo(K)Fluoranthene	2	U
192-97-2Benzo(E)Pyrene	2	U
50-32-8Benzo(A)Pyrene	2	U
198-55-0Perylèné	2	U
193-39-5Indeno(1,2,3-CD)Pyrene	$\bar{2}$	Ŭ
53-70-3Dibenz(A,H)Anthracene	$\bar{2}$	Ŭ
191-24-2Benzo(G,H,I)Perylene	132212322222233	ŭ
57-97-67,12-Dimethylbenz(A)Anthracene	3	ŭ
56-49-63-Methylcholanthrene	4	ŭ
30 13 0 The only removaling the	*	

SAMPLE NO.

31568-01MS

Lab Name: ENSECO

Contract:

GAC-SLP10TMSEX-100593

Lab Code: ENSECO

Case No.: 31568

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31568-01MS

Sample wt/vol:

Lab File ID:

C8181

4200 (g/mL) ML

% Moisture:

Level: (low/med) LOW

Concentrated Extract Volume:

Date Received:

10/06/93 Date Extracted: 10/09/93

decanted: (Y/N) N

500(uL)

Date Analyzed: 10/12/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

271-89-6	2,3-Dibenzofuran	5	U
496-11-7	2,3-Dihydroindene	64	
95-13-6	1H- Indene	8	
01_20_3	Naphthalene	٥	
4565-32-6	Benzo(B)Thiophene	9	R
91-22-5	Ouinoline	7	"
120-72-9	1H- Indolo	2	U
01 57 6	2-Methylnaphthalene	2 8 1 2 1	١٥
00 12 0	1-Methylnaphthalene	1	JR
92-52-4	Pinhonul	1	
202 06 0	bipnenyi	4	J
208-90-8	Acenaphthylene	17	۱۷
122 64 0	Acenaphthene Dibenzofuran	17 2	1
132-04-9	Dibenzoturan	1 2	
86-73-7	riuorene	15	1
132-65-0	Dibenzothiophene	1	U
85-01-8	Phenanthrene	8	l.,
120-12-/	Anthracene	1	U
260-94-6		3	U
86-74-8	Carbazole	2	U
206-44-0	Fluoranthene	3	
129-00-0	Pyrene	2	1
56-55-3	Benzo(A)Anthracene	2	U
218-01-9	Chrysene	4	
205-99-2	Benzo(B)Fluoranthene	2	U
207-08-9	Benzo(K)Fluoranthene	2	U
192-97-2	Benzo(E)Pyrene	1	J
50-32-8	belizu(A)Fyrelie	2	U
198-55-0	Pervlene	2	U
193-39-5	Indeno(1.2.3-CD)Pyrene	2	U
53-70-3	Dibenz(A.H)Anthracene	8132322422122233	U
191-24-2	Benzo(G,H,I)Perylene	3	U
57-97-6	7,12-Dimethylbenz(A)Anthracene	3	U
56-49-5	3-Methylcholanthrèné	4	U
			1

31568-01MSD

Lab Name: ENSECO

Contract:

GAC-SLPIOTMSDEX-100593 SDG No.:

Lab Code: ENSECO

Case No.: 31568

SAS No.:

Matrix: (soil/water) WATER

Lab Sample ID: 31568-01MSD

Sample wt/vol:

4200 (q/mL) ML

Lab File ID:

C8182

Level:

(low/med) LOW

Date Received:

10/06/93

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

CAS NO.

500(uL)

Date Analyzed: 10/12/93

Injection Volume:

2.0(uL)

COMPOUND

Dilution Factor:

0.119

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

271-89-62,3-Dibenzofuran	5	U I
496-11-72,3-Dihydroindene	54	•
95-13-6IH-Indene		
91-20-3Naphthalene	l š	
4565-32-6Benzo(B)Thiophene	6 8 3 6 2	R
91-22-5Quinoline	6	'
120-72-91H-Indole) 2	lu l
91-57-62-Methylnaphthalene	1 7	
90-12-01-Methylnaphthalene		JR
92-52-4Biphenyl	1 2 3	JR
208-96-8Acenaphthylene	2	R
83-32-9Acenaphthene	14	'
132-64-9Dibenzofuran	17	
86-73-7Fluorene	12	
132-65-0Dibenzothiophene	1	บ
85-01-8Phenanthrene		١٥
120-12-7Anthracene	6],,
	1	IJ
260-94-6Acridine	١	U
86-74-8Carbazole	1 1	J
206-44-0Fluoranthene	1	
129-00-0Pyrene	1 2	lu l
56-55-3Benzo(A)Anthracene	4	
218-01-9Chrysène	ا ع	1
205-99-2Benzo(B)Fluoranthene	1 4	ln l
207-08-9Benzo(K)Fluoranthene	2	ļŲ ļ
192-97-2Benzo(E)Pyrene	2	U
50-32-8Benzo(A)Pyrene	2	U
198-55-0Perylèné] 2	U
193-39-5Indeno(1,2,3-CD)Pyrene	2	U
53-70-3Dibenz(A,H)Anthracene	31222322222333	U
191-24-2Benzo(G,H,I)Perylene] 3	U
57-97-67.12-Dimethylbenz(A)Anthracene	3	U
56-49-53-Methylcholanthrene	4	U
	l	l

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Case No.: 31568 SDG No.: Lab Code: ENSECO SAS No.:

QC LIMITS S1 (NAP) = Naphthalene-d8 S2 (FLU) = Fluorene-d10 S3 (CHR) = Chrysene-d12 (14-108)

[#] Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31568 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: 31568-01

COMPOUND	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	(ng/L)	(ng/L)	(ng/L)	REC #	REC.
1H-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	ND 1.761 ND 1.059 6.997 ND ND	7.568 8.711 7.390 7.806 14.52 3.618 1.309	79 73 78 71 79 38 14	20-150 20-150 20-150 20-150 20-150 20-150 10-150

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC #	% RPD #	QC LI RPD	IMITS REC.
1H-Indene Naphthalene Quinoline 2-Methylnaphthalene Fluorene Chrysene Benzo(E)Pyrene	9.520 9.520 9.520 9.520 9.520 9.520	6.497 8.354 6.331 7.354 11.60 2.832 0.639	68 69 67 66 48 30 7 *	15 4 15 6 22 24 69 *	28 28 28 28 28 28 28	20-150 20-150 20-150 20-150 20-150 20-150 10-150

COMMENTS:

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31568

SAS No.:

SDG No.:

Lab File ID:

C8170

Lab Sample ID: BL100993

Instrument ID:

4500-C

Date Extracted: 10/09/93

Matrix: (soil/water) WATER

Date Analyzed: 10/11/93

Level:(low/med)

LOW

Time Analyzed:

2322

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	=======================================		22888888888	2255555555
01	31568-01	31568-01	C8171	10/12/93
02	31568-01DU	31568-01DU	C8197	10/15/93
03	31568-01FB	31568-01FB	C8178	10/12/93
04	31568-01FBD	31568-01FBD	C8179	10/12/93
05	31568-02	31568-02	C8198	10/15/93
06	31568-02DL	31568-02DL	C8188	10/12/93
07	31568-03	31568-03	C8199	10/15/93
08	31568-04	31568-04	C8174	10/12/93
	31568-01MS	31568-01MS	C8181	10/12/93

COMMENTS:

SAMPLE NO.

BLK01

Lab Name: ENSECO

Contract:

SDG No.:

Lab Code: ENSECO

Case No.: 31568

SAS No.:

Matrix: (soil/water) WATER

Lab Sample ID:

BL100993

Sample wt/vol:

4000 (g/mL) ML

Lab File ID:

C8170

Level:

(low/med) LOW

Date Received:

% Moisture:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/11/93

Injection Volume:

CAS NO.

2.0(uL)

COMPOUND

Dilution Factor:

0.125

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

271-89-6	2,3-Dibenzofuran	5	U
496-11-7	2,3-Dihydroindene	l i	Ιŭ
95-13-6	1H-Indene	0.9	, -
91-20-3	Naphthalene	6.3	lŭ
4565-32-6	Benzo(B)Thiophene	0.9	
01_22_K	Quinoline	1	ΙŬ
120 72 0	IH-Indole	1 2	Ü
01 57 6	2 Mothylmontthalana	2 0	
91-3/-0	2-Methylnaphthalene	0.9	
90-12-0	1-Methylnaphthalene	2	Ü
92-52-4	Bipnenyi	•	Ü
208-90-8	Acenaphthylene	ļ <u></u>	Ü
83-32-9	Acenaphthene	1 1	Ü
132-64-9	Dibenzofuran	1	U
86-73-7	Fluorene	1	Ų
132-65-0	Dibenzothiophene	ļ	Ü
85-01-8	Phenanthrene	Į Į	U
120-12-/	Anthracene	1	U
260-94-6		3 2	U
86-74-8	Carbazole	2	U
206-44-0	Fluoranthene	I I	U
129-00-0	Pyrene	1	U
56-55-3	Benzo(A)Anthracene	2	U
218-01-9	Chrysene	3	U
205-99-2	Benzo(B)Fluoranthene	2	U
207-08-9	Benzo(K)Fluoranthene	2	Ü
192-97-2	Benzo(E)Pyrene	2	U
50-32-8	Benzo(A)Pyrene	2	Ū
198-55-0	Pervlèné	2	Ū
193-39-5	Indeno(1,2,3-CD)Pyrene	$\bar{2}$	Ŭ
53-70-3	Dibenz(A,H)Anthracene	$\bar{2}$	Ŭ .
191-24-2	Benzo(G.H.I)Pervlene	123222222233	Ŭ
57-97-5	Benzo(Ĝ,Ĥ,Í)Perylene 7,12-Dimethylbenz(A)Anthracene	3	Ŭ
56-49-5	3-Methylcholanthrene	ă	Ŭ
30 4 3 3	5 fictily fellor all till till	· ·	•

SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

BLK02

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31568

SAS No.:

SDG No.:

Lab File ID:

C8180

Lab Sample ID: BL101193

Instrument ID:

Date Extracted: 10/11/93

4500-C

Matrix: (soil/water) WATER

Date Analyzed: 10/12/93

Level:(low/med)

LOW

Time Analyzed: 1426

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
01	31568-01MSD	31568-01MSD	C8182	10/12/93

COMMENTS:

SAMPLE NO.

Lab Name: ENSECO Contract: BLK02

Lab Code: ENSECO

Case No.: 31568

SAS No.:

SDG No.:

Matrix: (soil/water) WATER

Lab Sample ID: BL101193

Sample wt/vol:

2000 (g/mL) ML

Lab File ID:

C8180

(low/med) LOW Date Received:

% Moisture:

Level:

decanted: (Y/N) N

Date Extracted: 10/09/93

Concentrated Extract Volume:

500(uL)

Date Analyzed: 10/12/93

Injection Volume:

1.0(uL)

Dilution Factor:

0.125

GPC Cleanup:

(Y/N) N

pH: 7.0

CONCENTRATION UNITS: (ng/L or ug/Kg) ng/L

CAS NO.	COMPOUND	(ng/L or ug/Kg) ng/		Q
271-89-6 496-11-7 95-13-6 91-20-3 91-22-5 120-72-9 91-57-6 92-52-4 208-96-8 83-32-9 132-64-9 86-73-7 132-65-0 85-01-8 260-94-6 86-74-8 206-44-0	2,3-Dibenzofurar2,3-Dihydroinder1H-IndeneNaphthaleneBenzo(B)Thiopher1H-Indole2-Methylnaphthal1-MethylnaphthalAcenaphthyleneAcenaphtheneDibenzofuranFluorenePhenanthreneArthraceneAcridineCarbazoleFluoranthene	(ng/L or ug/Kg) ng/	5 10.9 0.9 120.9 24 11 11 11 13 21	ככככככככככככככ
129-00-0 56-55-3 218-01-9 205-99-2 207-08-9 192-97-2 50-32-8 198-55-0 193-39-5 53-70-3 191-24-2	PyreneBenzo(A)AnthraceChryseneBenzo(B)FluorantBenzo(K)FluorantBenzo(E)PyreneBenzo(A)Pyrene	Pyrene	11232222222334	

8B SEMIVOLATILE INTERNAL STÄNDARD AREA AND RT SUMMARY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31568

SAS No.:

SDG No.:

Lab File ID (Standard): C8161

Date Analyzed: 10/11/93

Instrument ID: 4500-C

Time Analyzed: 1627

		ISI(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	12 HOUR STD	380579	15.87	628678	19.72	691538	30.32
	UPPER LIMIT	761158 190290	16.37 15.37	1257356 314339	20.22 19.22	1383076 345769	30.82 29.82
	EPA SAMPLE NO.			200000000		200330000	
01 02 03	31568-01 31568-04 BLK01	650112 750276 621052	15.84 15.84 15.85	1074280 1210310 1034570	19.69 19.69 19.70	902119 1320930 978552	30.29 30.29 30.31
U 3		021032			13.70	370332	50.51

IS1 (ACN) = Acenaphthene-D10 IS2 (PHN) = Phenanthrene-D10 IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area.

RT UPPER LIMIT = +0.50 minutes of internal standard RT.

RT LOWER LIMIT = -0.50 minutes of internal standard RT.

Column used to flag internal standard area values with an asterisk. # Values outside of QC limits.

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENSECO

Contract:

Lab Code: ENSECO

Case No.: 31568

SAS No.:

SDG No.:

Lab File ID (Standard): C8176

Date Analyzed: 10/12/93

Instrument ID: 4500-C

Time Analyzed: 1058

		ISI(ACN) AREA #	RT #	ISZ(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
	12 HOUR STD	408590	15.52	628972	19.34	317435	29.79
	UPPER LIMIT	817180	16.02	1257944	19.84	634870	30.29
	LOWER LIMIT	204295	15.02	314486	18.84	158718	29.29
	EPA SAMPLE NO.	343343338	3833333				283222
01	31568-01FB	448562	15.49	634040	19.32	419772	29.77
02	31568-01FBD	416751	15.52	600765	19.34	363964	29.79
03	31568-02DL	569596	15.50	939346	19.32	540114	29.77
04	31568-01MS	546113	15.49	901042	19.32	579200	29.77
	31568-01MSD	558985	15.52	891368	19.34	552067	29.79
	BLK02	462840	15.52	750961	19.34	427768	29.81

IS1 (ACN) = Acenaphthene-D10 IS2 (PHN) = Phenanthrene-D10

IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

[#] Column used to flag internal standard area values with an asterisk.

^{*} Values outside of QC limits.

8B SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

📭 ab Name: ENSECO Contract:

SDG No.: Lab Code: ENSECO Case No.: 31568 SAS No.:

Lab File ID (Standard): C8192 Date Analyzed: 10/15/93

Instrument ID: 4500-C Time Analyzed: 1120

;		ISI(ACN) AREA #	RT #	IS2(PHN) AREA #	RT #	IS3(BAP) AREA #	RT #
i		2222222	*=====	=======		========	
	12 HOUR STD	459063	15.47	871252	19.27	631704	29.67
	UPPER LIMIT	918126	15.97	1742504	19.77	1263408	30.17
	LOWER LIMIT		14.97	435626	18.77	315852	29.17
	=========	2=======		=======	222222		======
	EPA SAMPLE NO.,						
	==========	========	200000	=========	======		======
01	31568-01DU	769790	15.47	1173200	19.27	513591	29.66
02	31568-02	896367	15.47	1146560	19.27	590481	29.66
03	31568-03	895088	15.45	1321530	19.25	606624	29.66
		l <u></u> 1					

IS1 (ACN) = Acenaphthene-D10
IS2 (PHN) = Phenanthrene-D10
IS3 (BAP) = Benzo(A)Pyrene-D10

AREA UPPER LIMIT = + 100% of internal standard area. AREA LOWER LIMIT = - 50% of internal standard area. RT UPPER LIMIT = +0.50 minutes of internal standard RT. RT LOWER LIMIT = -0.50 minutes of internal standard RT.

[#] Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.